

How to Make Home
and City Beautiful





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A SCHOOL GARDEN EXHIBIT.

HOW TO MAKE HOME AND CITY BEAUTIFUL

PREPARED TO HELP THOSE INTERESTED
IN MAKING ATTRACTIVE HOMES
AND BEAUTIFUL CITIES

BY

H. D. HEMENWAY

NORTHAMPTON, MASSACHUSETTS

SB⁹³
112

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N. A. C.

P R E F A C E .

This little book is written with a view of furnishing inspiration and help to those who want to make their homes attractive and the city a cleaner, healthier, better and prettier place in which to live. The author endeavors to keep the book in clear, simple, and concise language. The first ten chapters are from plates of "Hints and Helps For Young Gardeners." These chapters refer largely to elementary agriculture and work in the vegetable garden. The remaining chapters treat more directly upon beautifying the home grounds and the care of the surroundings of the home. Credit is here given for the use of cuts by the Syracuse Chilled Plow Co., and by the Massachusetts State Board of Agriculture.

H. D. HEMENWAY,

Northampton, Massachusetts, 1911.

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C H A P T E R I .

INTRODUCTION.

IN America, garden work and elementary agriculture as a means of education has been successfully demonstrated for nearly a score of years. Many of its enthusiastic advocates believe it has already past its experimental stage, and should be included in the curriculum of every well-organized school.

On the other hand, there are conservative educators, who still look upon it as a fad. Many others, probably the larger number, believe in it, but for the lack of efficient teachers, and equipment, hesitate to advocate introducing the School Garden.

Several institutions in the country have already begun to train teachers and the School Garden movement is making rapid progress. The time is not far distant, when practical, elementary agriculture, and gardening will be taught in many schools. It develops the children physically as well as mentally and in the open air often creating a love for things, which keep the city boy off the street corners during the summer, and teaches the country child the business-like, up-to-date methods in agriculture and gardening.

It not only educates the head, the heart, and the hand, but it aids in the practical application of reading, writing and arithmetic. Gardening increases and develops the power of observation. It makes a person quick to grasp ideas and to put these ideas into action. These are important foundations for success in any line of business. It develops moral character.

Few things, if any, develop a love of industry better than the well-kept garden. Ever changing nature lures us on to help some pet plant to grow until we love the work.



An unsightly yard.



The same yard three months later.

What was once unsightly, unsanitary and unproductive, becomes a resort of beauty, of health and of utility for a whole family.

Photos by Edward Mahoney.

Establishing a School Garden may change the entire healthfulness of a neighborhood. The school grounds, themselves may be better planned and more healthful, but the best effect may be at the homes. The School Gardener soon wants a garden at home. No matter how small the yard, there is room for a garden for the boy or girl, *even if it has to be established in a soap-box*. There is much waste room often used for ashes, tin cans, or rubbish in many yards. What was once unsightly, unsanitary, and unproductive, becomes a resort of beauty, of health and utility for a whole family. It opens up a source of revenue, creates a love of industry, and respect for property, and is often the beginning of better things. The gardener becomes a better American citizen.



Learning habits of close observation.

CHAPTER II.

HOW TO PLAN THE GARDEN.

THE first thing in planning a garden is to decide upon the location. If there is sufficient land so a choice can be made always select the best land with the most sunny exposure. If it has a southern slope it will be still earlier and warmer.

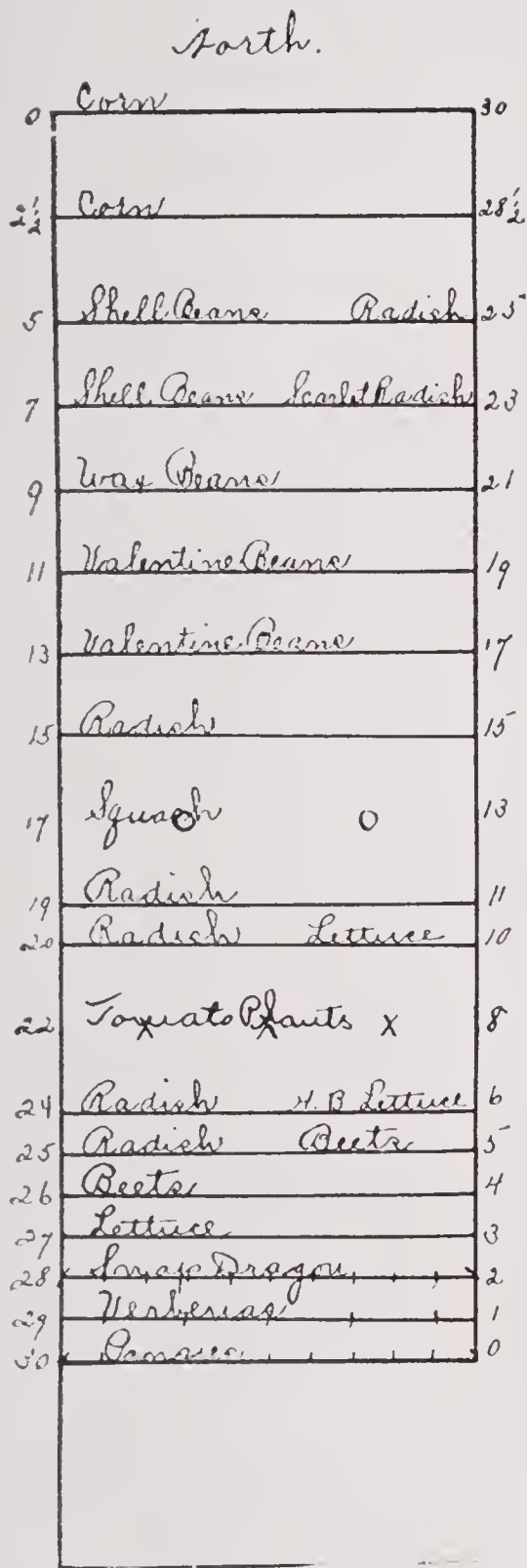
Enrich it with rotted stable manure at the rate of ten cords or more to the acre. In the absence of stable manure* use a liberal sprinkling of wood ashes, and bone dust and apply a little nitrate of soda to the crops occasionally, especially to the leaf crops. If there is a board fence place the tall growing crops next to it, otherwise place them on the north side.

Do not try, at first, to grow rare or uncommon things. Cover the fences with flowering vines, as nasturtiums, morning glories, cobaeas, Japanese hop, etc. Any unsightly places may be covered with the above named vines or with wild cucumber, gourds, squash or pumpkins. Low flowers show best when planted along the path. Taller ones may be planted back of them. Give everything plenty of room.

Rows of corn or potatoes should not be closer than two and one-half feet in the garden, or three or three and one-half feet in the field. Tomatoes should be three to four feet apart, and hills of squashes and cucumbers should never be closer than five feet apart, although other early crops may be planted within four feet of them.

A crop of lettuce, radishes, spinach or onions, may be obtained from the spaces between the crops that are planted more than two feet apart. Different kinds of corn should not be planted in the same garden. Different varieties of

*The street department will generally furnish plenty of street sweepings for the School Garden.



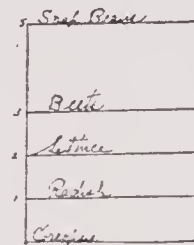
Garden 10x30 ft.

A good plan for the whole season.
From report of Director of Hart-
ford School of Horticulture.

the same kind may, however. It is well to plant *an early* and a *later* variety of sweet corn. Plan for a good variety of vegetables but do not try to grow things from which you are not reasonably sure of getting a crop.

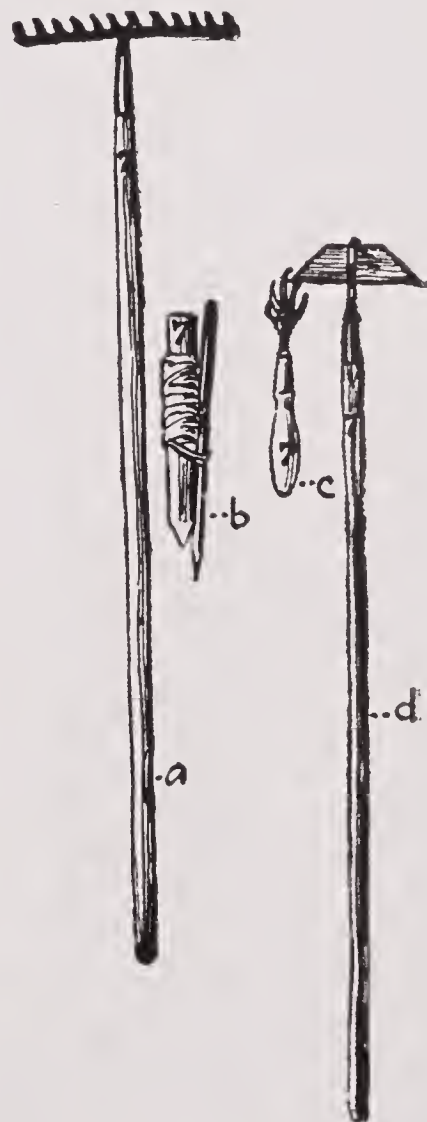
Begin early to plan the garden. Draw the plans on paper and study them. Make the changes, if there are any, then, when the time comes, you have a definite plan to work upon and no time is lost. In making the plans for a School Garden avoid using the front lawn, at least the center of it, and avoid encroaching upon a needed play-ground. Do not forget the aesthetic side but have something besides that. Let the garden teach, as well as industry and gardening, economy and productiveness.

In selecting tools, it is important to buy good ones. Avoid toys, and those that are cheap and worthless. The best workman cannot do good work with inferior tools, much less can the inexperienced. While good tools



Garden 4x5 ft.

Plan for small garden that will ripen all its products before the first of July.

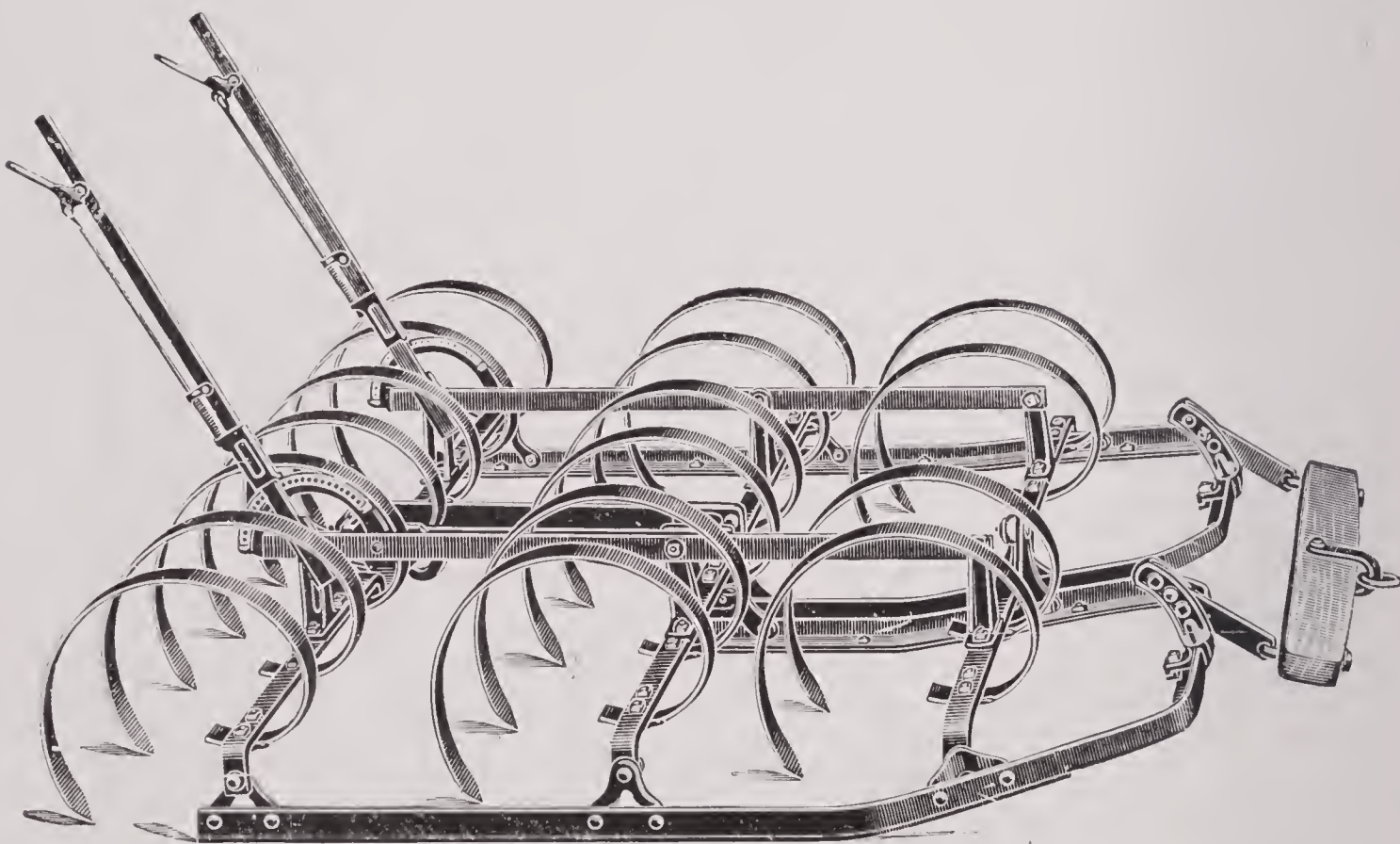


The Needed Tools.

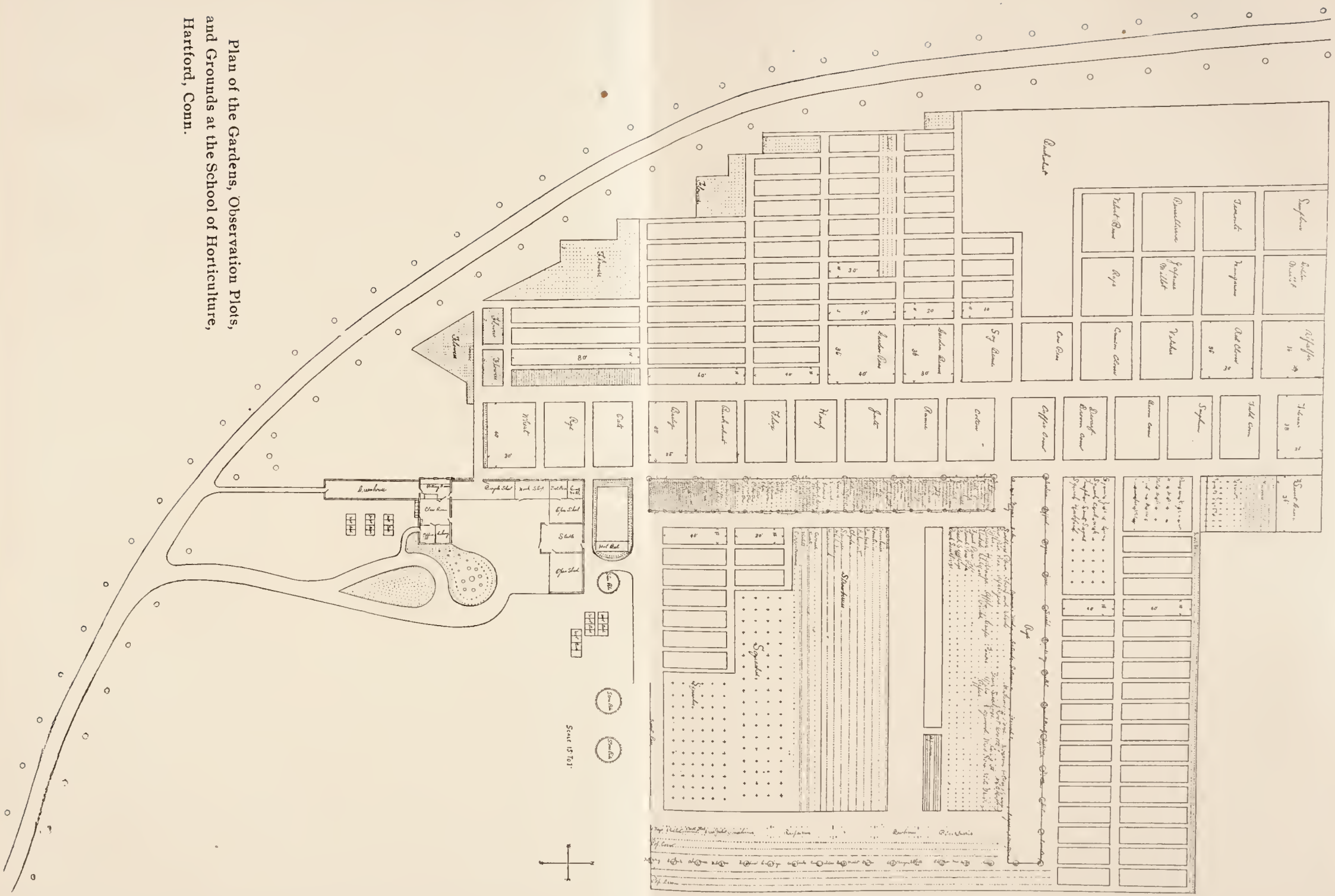
a. Rake. c. Hand Weeder.
b. Line. d. Sunnyside Hoe.

Cut loaned by
Doubleday, Page & Co., N. Y.

cost more at first, they are cheaper in the end. With good tools, the beginner should begin to handle them correctly.



One of the modern harrows.



Plan of the Gardens, Observation Plots, and Grounds at the School of Horticulture, Hartford, Conn.

CHAPTER III.

SOIL TILLAGE.

TILLAGE is the working or stirring of the land in order to improve it for agricultural purposes. The term cultivation is sometimes used but tillage is a technical term and is to be preferred. The fundamental practice in farming is *tilling* the land.

The modern ideas of tillage dates from 1733, when Jethro Tull published a book on Horse-Hoeing Husbandry. While his theory was not correct as to the manner that plants take food, he was the first in England to advocate tilling the soil. His idea was that particles were made so fine that the small roots could take them in as food. It was only in the latter part of the century just closed that the real reasons for tillage became popularly understood in this country.

THE OBJECTS OF TILLAGE.

Tillage improves the land in many ways. It pulverizes the soil, allowing air to enter and make available the plant food. It gives the roots a wider pasture. It saves moisture. It is practiced to prevent the growth of weeds and other vegetation not desired upon the ground. To place beneath the surface, manure, stubble and other organic matter where it will not be in the way, and where it may be converted rapidly into humus. Tillage will develop various degrees of openness of texture and uniformity of soil and conditions suitable to the planting of seeds and the setting of plants.

The first requirements in the growing of plants is *proper and thorough tillage*. It is more important than the application of fertilizers. By thorough and careful tillage good crops can be raised on semi-arid regions of the west which have a rainfall of only a little more than one-third our average rainfall.

IMPLEMENTS USED IN SOIL TILLAGE.

The spade and the plow are the first implements to be used in tillage.

THE SPADE, is made for entering the soil, prying it off and turning it over. Its size and shape have been fixed by experiment. Many sizes are made according to the work for which they are to be used. It is heavier and stronger, then the shovel, which is made for shoveling soft earth. Where the soil is not too hard, the spading fork will spade the soil easier and quicker.

THE PLOW, less than ninety years ago the wooden plow was the only one in use. In 1823, an inventor in Hartford, Connecticut, made the first cast plow bottom ever made. Nearly all plows before this were crooked sticks with a little metal protection.

Joel Nourse, in 1825, with an ox team took three hundred cast iron plows from Hartford to Worcester, Mass. He became the head of the Ames Plow Co., of Worcester, Massachusetts.

Frost Horton, a New York statesman, about the same time began developing plows. These two men kept experimenting until they had each perfected nearly five hundred different kinds of plows.

The object of plowing is to alter the texture, forming from a comparatively hard soil a mellow layer of earth, and to bury beneath the surface, weeds and other vegetation and manure that it may rapidly decay.

Plows vary in shape according to the purpose for which they are to be used. The SUBSOIL PLOW is one made to follow in the furrow of the other plow. It has a long point which goes twelve or fifteen inches into the ground breaking up the subsoil. It does not turn up the lower soil but breaks it up.

THE HARROW, is the implement to follow the plow, i. e. to be used after the plowing is done. All kinds except the old spike-tooth, are of recent origin. They pulverize the soil and should always be used after plowing. The kind of harrow to be used depends upon the work to

be done. On sod or heavy land a disc, wheel or spading harrow should be used to be followed with a smoothing harrow. The harrow is the best thing to kill small weeds. Some kinds can be used after the crops are planted and until they are three or four inches high. It should generally follow the roller to break the capillary attraction and save moisture.

HAND AND HORSE CULTIVATORS, act as harrows. After the crops are three or four inches high, the cultivators should be used. These are made in many styles to cultivate the crops between the rows. As with plows, we have both walking and sulky cultivators. The latter kind are best in the west and on large farms. The teeth should not be too large, and the cultivator, for the best results should not go deeper than *three inches in summer*. This keeps a soil mulch over the surface at all times, saving the moisture, and allows the *crop to send the roots through the middle of the rows without the danger of being broken off* as would be the case with deeper tillage. Cultivation at first may be deep, but later should be shallow.

THE PLANKER, is used where a smooth surface is wanted. It breaks up the lumps and leaves the surface smooth without firming it much.

THE ROLLER, to do good work should not be smaller than two feet in diameter, and should have a weight of one hundred pounds to the foot in length. It should be used when seed is sown broadcast for the same reason that we press the soil over seed planted in the garden. It is also useful where a green crop has been turned under, to restore capillary attraction with the soil below. It should generally be followed with a light harrow, to prevent the surface baking and loss of water.

These are the commonest tools used in tillage aside from the hoe, rake, line and weeder used in every garden. Most of the tools are used to loosen the soil and to remove weeds.

In the small garden the hoe or rake, should be used at least once a week to make a soil mulch between the

rows. *The soil mulch* consists of a soft loose condition of the top soil. It should be two to three inches deep. The weeder is used about the plants and between them, where there is not room for the hoe.

All weeds near the plants *should be pulled*. A weed is a plant that persists in growing where it is not wanted. *It is a robber. It robs the rightful plants of moisture and food and will even kill them.* Weeds are best killed, when first germinated. *Never allow them to grow.*

HOW TO SPADE.

THE SPADE, is a tool made to pry with, to dig up the land. It differs from the shovel as it is made of heavier material, both the blade and handle. A shovel is used principally for digging loose material and is not supposed to be used for prying. The blade of the spade is made narrower than the shovel blade, so that it will enter the ground more easily. The blade is also flatter and not as "dishing" as the shovel for the same reason. It is not made for shoveling or digging loose soil but for digging hard ground. Where the ground is not too hard the spading fork is superior to the spade as it is lighter and the ground can be spaded faster.

In spading, begin in one corner of the plot with the back to the plot. Grasp the top of the handle with the right hand, press the blade of the spade or fork vertically down to its full extent with the foot working the handle a little if necessary where the ground is excessively hard or stony. Then carry the top of the handle backward and downward near the ground, at the same time carry the left hand down the handle and when at a point about one foot from the blade, lift up the spade and soil; turn it over, throwing it slightly forward to leave a furrow. Keep the back as straight as possible and do the lifting with the legs. Continue working along the end of the plot to be spaded. When across the end, spade back again, taking a slice from five to ten inches wide. When the spade-full of soil is turned over, it should be given a little throw and hit with the spade or fork to break it up. If the spading is done

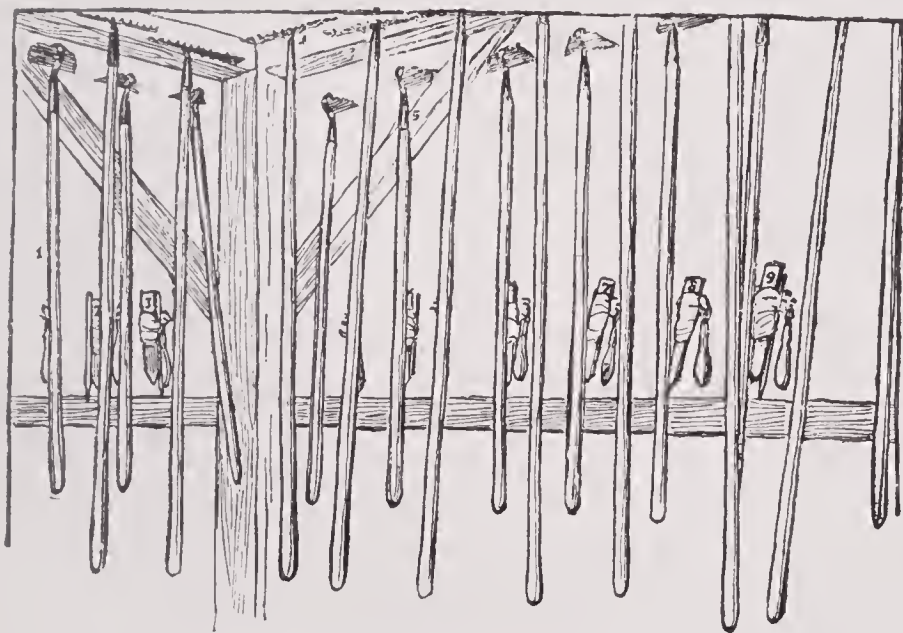
well, it will leave the soil finer than the plow does. In fact it does the plowing and part of the harrowing.

To **RAKE** the land, begin at one corner and rake towards the center. The rake should be used to level the land and break up the lumps rather than to rake them off. All coarse lumps that do not break up should be buried. Only the stone and very coarse matter should be raked off. When raking, lift the rake slightly when drawing it towards you. As in spading, rake one end first, stand on the spaded land and rake towards you. When smooth and fine, the footprints should be raked out as you pass off the plot. Spading and raking as well as plowing and harrowing are the first principals of *tillage*.

In using **THE HOE**, grasp the handle near the upper end in the right hand, with the back of the hand up. Grasp it with the left hand a foot or more lower down with the back of the hand to the left and the thumb extended along the handle. Avoid a cramped position. Bend the body slightly forward on the hips keeping the back straight. Never lift the hoe higher than the knee. Left-handed persons, and some that are not, will find it easier to have the left hand at the top. In this case the back of the right hand should be to the right and the thumb along the handle. These are correct positions for hoeing. Bet-

ter work can be done and done easier if one of these positions is always used. If the regular 4 feet 10 inch hoe handle is used, the child should grasp the handle from 12 to 18 inches from the end.

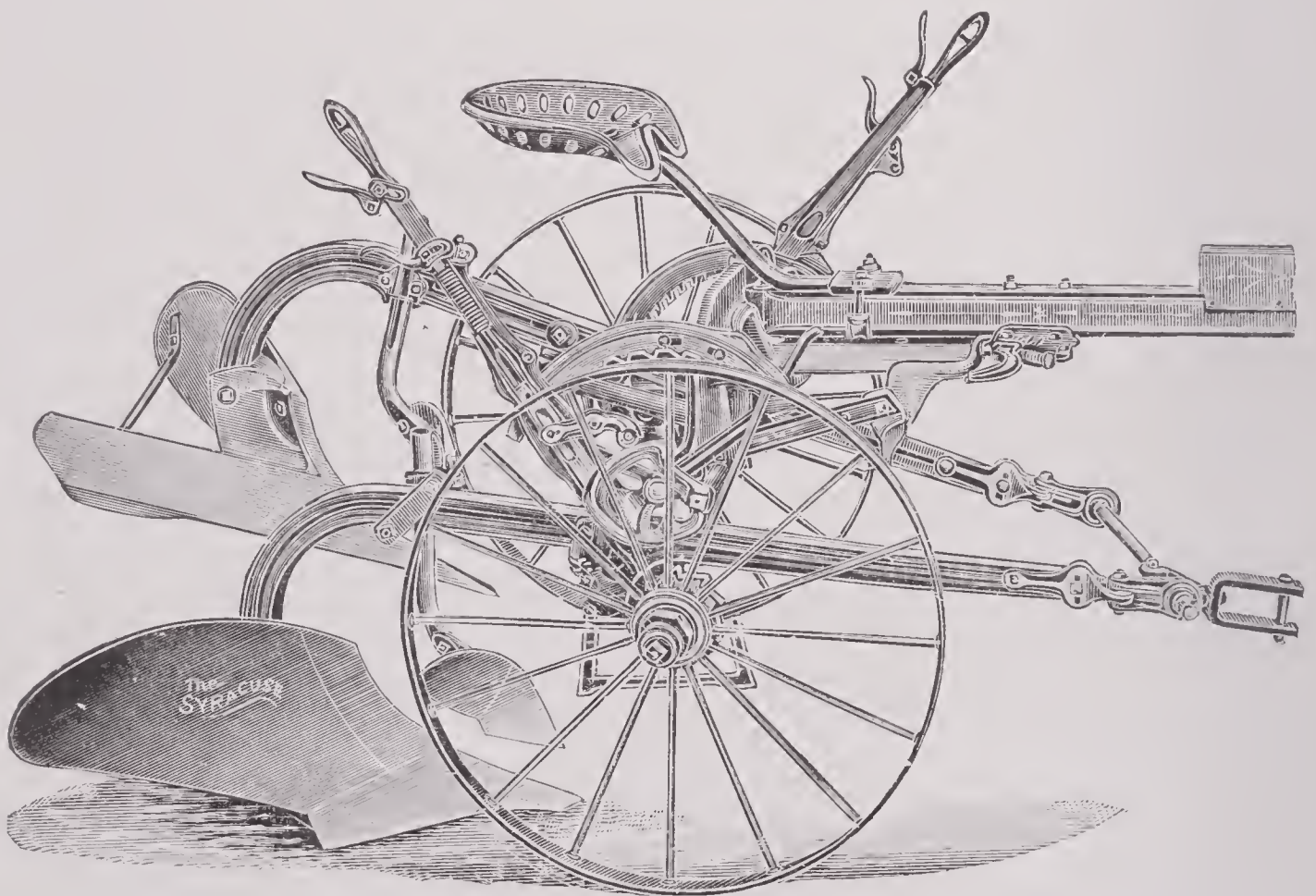
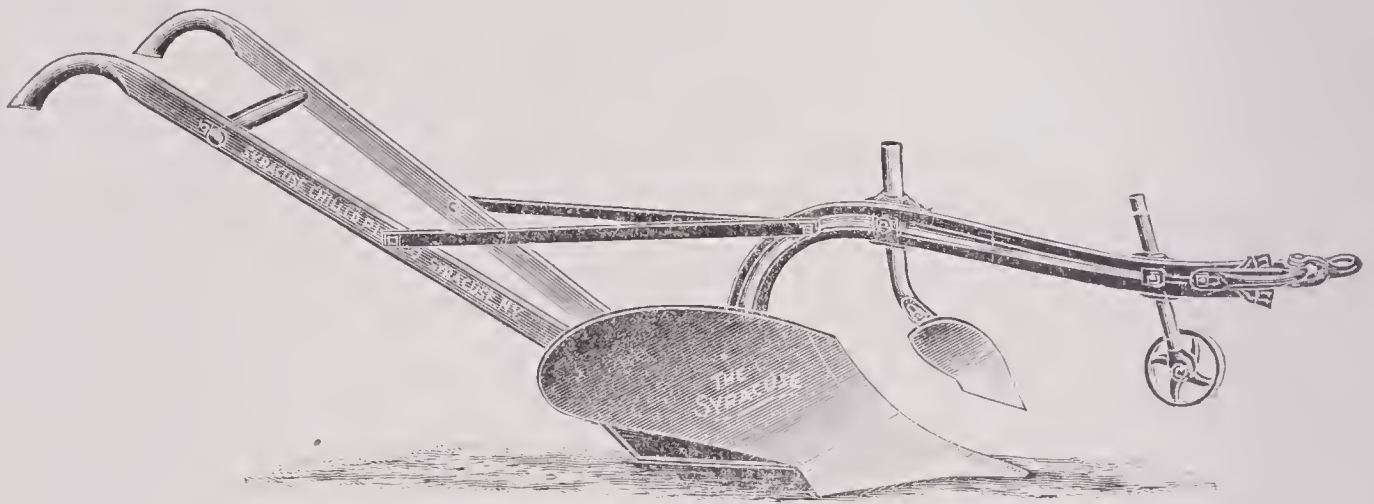
The Rake is held similar to the hoe



A corner in the tool room.
Cut loaned by Doubleday, Page & Co.

but the handle is allowed to slide through the hands more.

*When not in use all tools should be CLEANED and hung up.
Have a PLACE for everything and keep everything cleaned and
in its PLACE. IT WILL PAY.*



Modern Plows.

CHAPTER IV.

HOW TO TEST SEEDS.

OWING to the great importance of having good seed to plant, it is wise to test the seed before planting, to determine the percentage of live seeds. Eighty-five to ninety-five per cent. of seeds that will start is a good average for No. 1 seed. Take an average sample, count out 100 seeds and place them in a seed germinator. In the absence of a germinator a simple one can be made as follows: take an old uncracked kitchen plate, cut two pieces of thick cloth or blotting paper, the size of the inner part of the plate, wet thoroughly and drain them. Put one piece of cloth on the plate, and scatter the seeds evenly over it, cover them with the second cloth. Put a piece of glass or another plate over it, to prevent evaporation and set in a warm place. Examine frequently. If 100 seeds are used, the number of seeds that sprout will be the percentage of viable seeds. These sprouted seeds make fine specimens for germination studies. It is well to test all seeds.

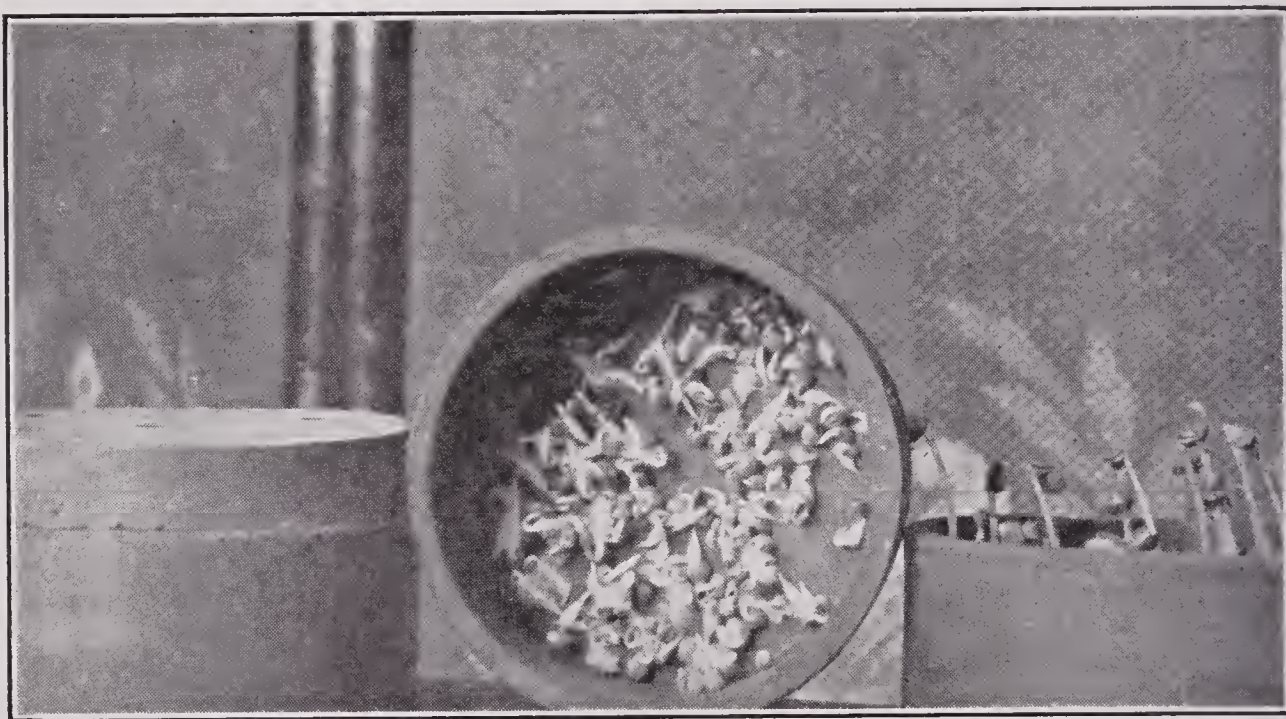
The following is a good form for a seed testing blank:

Name of Seed,			
No. of Seeds in Germinator, When put in (Date)			
Date.	No. of Seeds Sprouted.	No. of Seeds not Sprouted.	Per cent. of Seed Sprouted.
Source of Seed,			
Total percent. of seed sprouted,			
Remarks			
Tested by.....			

The seeds that are last to germinate in the germinators often fail entirely in the soil.

Germination is the sprouting of the seed. It is not complete until the young plantlet is established in the soil.

Monocotyledonous plants, those with one seed leaf, push their heads straight up. That is why they are so small. The little plant exists in the seed. The tiny leaves and stems are present, but the roots are lacking. Most seeds contain plenty of plant food to get the young plants well started in life.



Germinating seeds in a seed tester.

C H A P T E R V .

HOW TO PLANT.

A GARDEN should not be planted until the soil is thoroughly prepared. It is better to plant a few days late than to put the seed or plants into poorly prepared soil. A sandy loam can be planted a week earlier than a medium or heavy loam. A southern slope of 45° to 60° , increases the earliness of the soil a week over the same kind of soil on level ground.

Thus radishes, which should be planted about May 1st, in medium or heavy loam in the latitude of Hartford, could safely be planted on April 16th on sandy loam sloping to the south. Large seeds germinate quicker if they are soaked for a few hours in warm water at temperature not exceeding 120° F. They should not be soaked longer than twelve hours and the soaking of the seed should immediately precede the planting. With the land thoroughly prepared, the plans decided upon, planting should begin as soon as the temperature is suitable.

PLANTING DIRECTIONS.

BEANS, BUSH. Dwarf Horticultural Shell Beans, Cranberry Beans, Wax String Beans, and Giant Pod Valentine String Beans.

These are among the best. These grow from 12 to 30 inches high and have pods which enclose the seeds. In the Shell Bean varieties the seeds or beans are taken out of the pods and boiled and eaten alone, or with corn as succotash. The Horticultural beans are picked when the pods are striped with red. The pods of the string beans are eaten and should be picked before they become tough. A good way to tell when they are ready is to bend them in the shape of the letter U, they should snap.

Plant all Bush varieties in rows not closer than two feet apart. Dig a furrow three inches deep and sprinkle

a pint of wood ashes or one-half pint of sulphate of potash or bone dust, into the furrow to every ten feet. Mix this into the soil with a weeder or with a point of the hoe. When this is done the furrow will be about one inch deep. Place the beans three or four inches apart in the furrow, one bean in a place, cover with the fine soil, and press down with the back of the hoe. It will take them between one and two weeks to come up. The two halves of the bean furnishes food for the young plant, they are first to come above the soil. The soil should be kept well-tilled at all times, but avoid handling the vines on wet days. The beans will be ready to eat in from six to nine weeks after planting. Any of the Bush beans can be planted from May 10th to July 1st.

BEANS, BUSH LIMA. Bush Lima Beans are planted the same as the other varieties of dwarf beans, except, each bean is put four to six inches apart in furrow. The pods should be picked when the beans in them are about the size of a twenty-five cent piece. They are generally considered much nicer than the ordinary shell bean. Bush Lima Beans continue to blossom and bear pods until frost comes. They should be planted about May 10th. If planted before the soil is warm, they will never germinate. It will take them three to six days longer than the other beans to come up.

BEANS, POLE. The furrows for Pole Beans are made not closer than three feet apart. The pole should be firmly set, before the beans are planted and then four or five beans planted in circle around it. These should be covered about one inch, leaving the land level after the beans are planted. One pint of wood ashes, or one-half pint of sulphate of potash or ground bone, should be worked into the hills at the rate of about one pint of wood ashes to every ten feet of row. Pole beans of any kind generally yield more than the Bush beans. If the first that mature are picked, they will continue to bear. They should be planted at the same time as Bush beans, but it will take them one or two weeks longer, before they are ready to eat.

BEETS. Crosby's Egyptian, or any table variety. Beets can be planted in rows one foot apart. If the ground is not rich, hoe a half-pint of market-garden fertilizer or a mixture of nitrate of soda, and super-phosphate into the soil in which they are to be planted, to every ten feet of row. Make a furrow one inch deep and drop the seed, one to two inches apart, cover with fine soil, and press down. They will be up in about six days and when they are four inches high they should be thinned to about three inches apart, using those that are pulled out to transplant or for greens. When they are transplanted, be *sure to make holes deep enough*, so that the end of the roots do not turn up, and twist off all the leaves except the center ones. Always keep the soil in a perfect state of tillage. Beets are cultivated for their roots, which are best when one to two inches in diameter. They can be planted from about April 30th, to July 10th. They are ready to eat in from eight to twelve weeks after planting.

BRUSSELS SPROUTS. These should be planted in rows two feet apart. They do best on new land. Make a furrow one inch deep and drop three or four seeds every 18 inches. Cover with fine soil and press down. They will come up in about six days. Brussels Sprouts are cultivated for the buds which are in the axils of the leaves. They are milder than the cabbage and are boiled and served with a cream sauce. They are ready to eat in about twenty-one weeks after planting and are best after they have been touched by the frost. They, like all the cabbage family, do not do well in hot weather. They make their final growth in the cool months in autumn. Before the ground freezes they can be pulled up and packed upright with their roots in moist sand, and in this condition can be kept in a cool cellar or pit nearly all winter.

BROCCOLI. Should be planted about May 20th. The seed is covered one inch and the rows are not closer than two feet apart, and the plants, eighteen inches in the row. They are treated almost exactly as Brussels Sprouts in every way. The heads resemble Cauliflower and are

served similar to it. They are purple instead of white. They are ready to eat in about twenty-one weeks after planting.

CABBAGE. All Seasons and Jersey Wakefield, are among the best early. Cabbages are grown for their leaves which form a head, which becomes very solid. It is boiled and eaten, or eaten raw in many different ways. The early crop should be planted in March in a shallow box in the window garden, or in the hot-bed. The seeds are covered about one-half inch. They can be set out, one plant in a place in rows, two to three feet apart and eighteen to twenty-four inches apart in the row. The seed will be up in about six days. The young plants are best transplanted when the fourth leaf has formed. They will stand frost, but should not be put out of doors when it is likely to freeze. They do best on new ground. They can be planted outside from April 30th to June 15th. The easiest way to grow them in the garden is to plant three or four seeds in hills two feet apart. To make a hill, drop a pint of wood ashes in the row every two feet and work it well into the soil with the weeder or hoe, leaving the soil one-half inch lower than the rest of the garden. Drop three or four seeds and cover one-half inch; press down. When the cabbages are well up they should be thinned to one plant in a place. The rows cannot be closer than two feet. It is very important that the cabbage be frequently hoed. Stirring the soil every few days will pay well.

CARROTS. Chantenay, Danvers, Half Long Orange, Earliest Scarlet Forcing are among the best varieties. These are cultivated for their roots. They should be planted in rows twelve inches apart and one inch deep. The seeds should be planted fairly thick as they do not always germinate well. It is not generally good the second year. A rich, deep loam is best. The land should be prepared the same as for Beets. When well up they should be thinned to three inches apart.

CAULIFLOWER. Early Snowball, and Early Dwarf Erfurt are among the best. Plant the seed in boxes in the

window-garden or hot-bed, any time from March 1st to June 15th. When the fourth leaf has formed, the plants should be set out in rows, two feet apart and not closer than two feet apart in the row. The ground should always be kept in a thorough state of tillage about the plants and it is well to hoe them in the morning when the dew is on. When the head begins to form, the long leaves should be tied over it to keep it white. Cauliflower like all the cabbage family, do best in cool weather and will grow rapidly if they come to the head during the summer. They will mature in from fifteen to twenty-five weeks. They will stand frost.

CELERY. Paris Golden, White Plume, and Boston Market are among the best garden varieties. The seed should be sown in a hot-bed or window box from April 10th to May 20th. The box should have lumps in the bottom for drainage and the upper part should be filled with fine soil. Seed should be evenly sowed over the surface and covered one-fourth inch. When the third or fourth leaf has formed, the celery should be transplanted into the hot-bed or other boxes two inches apart each way. From this the plants should be set in the garden, in rows four or five feet apart and eight inches apart in the row. They can be set as late as July 15th, on land that has borne a crop of peas. A crop of peas, radishes, lettuce, onion-sets or even beans may be grown between the rows of celery. The seed germinates very slowly and may not be up for a month. New seed should always be used. Celery is ready to eat from twenty to forty weeks after planting. In the fall it should be banked up and just before the ground freezes, it should be dug and packed in pits or in the cellar and the roots covered with moist sand. If packed in the cellar it should have the coolest part and packed as close as possible and handled only when dry. Properly packed it will keep all winter and can be used at any time.

CELERIAC. This is used in flavoring soups and is grown for the fleshy root which matures like turnip. It

can be grown the same as celery or the seed may be sown in the garden, in rows two feet apart and the plants thinned to eight inches apart. As it does not germinate readily, it is best to start the plants in boxes and transplant them.

SWEET CORN. Early Cory, Squantum, and Country Gentleman are among the best varieties and will mature according to the order in which they are named. It is well to plant a few rows of the early, and then make several plantings of the Country Gentleman so as to have sweet corn from July until frost comes. To get the most from the land, plant in rows, two and a half feet or three feet apart, putting three kernels every six inches, and pulling out all but one as soon as the corn is well up. The suckers around the roots should be kept removed. Corn should be planted on the north end of the garden or in such a way as to prevent shading lower plants. It grows from five to eight feet high. Squantum or Country Gentleman corn planted on or before June 1st, will be in condition to eat, when school opens in autumn, if it has had care during the summer. Corn will be ready from ten to twenty weeks after planting, according to the kind. Seeds should be covered one inch and the land should be rich in potash. It is well to hoe a pint of wood ashes or a half pint of sulphate of potash into every ten feet of row before planting. It is not generally wise to plant field and pop corn in the same garden as it will mix, the pollen being carried by the wind.

CORN SALAD. Corn Salad is a salad plant for summer use. Sow May 1st, in rows twelve inches apart and thin the plants to six inches in the row. The trench should be made one-half inch deep. It is grown for the leaves which are used for salad. It can also be planted in September for winter or early spring salad in which case it must be covered with straw on the approach of winter.

CRESS. Garden Cress should be planted in furrows, twelve inches apart and one-half inch deep. The plants should be thinned to six inches apart in the rows. It

should be planted in the garden about April 30th, and the crop will be ready to eat in about five or six weeks. The leaves are eaten as a relish and used as a salad.

CUCUMBER. White Spine is one of the best for table use. Early Cluster, Ever Bearing, Windsor Pickling are good pickling varieties. The cucumber grows on a vine and should not be planted in very small gardens, unless along a fence where it can climb. It can be planted beside a rubbish heap or a pile of stones to good advantage. It belongs to the same family as the canteloupe, watermelon, pumpkin, and squash, which are all planted the same way. They should be planted in hills not closer than four or five feet apart, although they may be planted nearer to early beans or early potatoes or any crop which will be out of the way before the vines begin to run. The vines are generally allowed to run on the ground. They are planted in hills. *To make a hill*, dig a hole from four to five inches deep and one foot in diameter. Fill this within one inch of the top with a mixture of sand and well-rotted manure. Drop eight to ten seeds in a hill, scattering them over it. Cover them half to one inch and press down. When planted in this way they get a quick start. Never plant until the ground is thoroughly warm, about May 25th. It is well to keep the vines covered with a frame of mosquito netting until the fourth leaf has formed, then thin the plants to three or four in a hill. In warm weather they come up and grow rapidly. They begin bearing in from eight to ten weeks after planting.

DANDELION. The dandelion may be planted in the spring or in August or the first of September. The former time will give the largest plants the following spring. Plant in rows about April 30th, twelve to twenty-four inches apart and thin the plants to six or eight inches apart. They should be up in about eight days. It is best to plant these in the sunniest part of the garden and to cover them in the early spring with sash so as to get very early greens. They should be planted in gardens that are to remain for two or three years. In case they are not all

used in the early spring, they should be kept mowed to prevent their going to seed as they may become a troublesome weed. They are used not only for greens, but also blanched and used for a salad. The seeds should be lightly covered and the plants kept in a good state of tillage. It is not a plant to grow in the School Garden.

EGG PLANT. Egg Plants grow on bushes from twelve to eighteen inches high. The fruit is purple and should be picked when it is about two or three inches in diameter. The seeds should be planted in boxes in the window garden or in the hot-bed in February or as soon as the first of March. Cover about quarter of an inch. When the third or fourth leaves are formed, they should be potted into two and a half inch pots and later repotted into four inch pots. They should be transplanted into the open ground about the first of June. The ground should be made very rich. They should be set about two feet apart in the row with the rows two and one half or three feet apart. In setting them, make a hole so the plant can be set a little lower than it was growing in the pot. To remove it from the pot place the fingers over the pot, so that the plant comes between the first and second fingers, invert it, and thump it lightly on the table, bench, or spade, and the plant will be readily removed. Crumble the upper and lower edges slightly, place it in the hole and press the fine soil about the ball of earth firmly with the ends of the fingers. If it is dry it is best to water. You can begin cutting the fruit in about fifteen weeks after planting and they will continue bearing until frost. The Egg Plant like the tomato furnishes an opportunity for lessons in potting and repotting.

ENDIVE. For an early crop start in the hot-bed or window garden and transplant the same as the egg plant in rows twelve inches apart with the plants twelve inches apart in the row. For the later crop sow from May 1st to July 30th, in the garden, in furrows, one-half inch deep. It germinates readily and will be up in four to six days.

It is cultivated for the leaves which are used for salad. When well grown, tie the ends of the leaves to blanch the center with a soft material. It should be used about two weeks after tying.

KALE. Kale is planted in rows eighteen to twenty-four inches apart, and thinned to twelve inches apart in the row. It is planted one-half inch deep and can be planted at any time from April 30th to June 1st. It is used for greens and is best after it has been touched by the frost. It belongs to the cabbage family and makes its best growth in the cool part of the year.

KOHL RABI. Sow in furrows, twelve to eighteen inches apart, cover the seed one-half inch and thin the plants to six inches apart. They will be up in five to six days. Plant from May 1st to July 1st. The bulb is formed on the stem, just above the ground; it is cooked and served the same as turnip, but tastes similar to cabbage, only milder. They are best when not more than two inches through. If they stand long after they reach this size, they become tough. They are ready to eat in from twelve to fourteen weeks after planting. They can be stored in a cool cellar, and for a winter crop should be planted as late as July 1st.

LETTUCE. There are two kinds of Lettuce; the Cos and the Head Lettuce. The Head Lettuce forms a head like cabbage. The Hartford Bronzed head, Big Boston, White and Black seeded Tennis-ball, and Hanson make large and fine heads. Used for salad and table use. Lettuce can be planted in-doors, the same as Endive and transplanted to the garden, May 10th, or it may be sown in the garden any time after May 1st to July 10th. Prepare the land the same as for beets, make a trench one-half inch deep and sow two or three seeds every four to six inches. Cover and press down. When the plants are well up, thin them to six inches apart. Keep the soil well-tilled around the plants, and as soon as they crowd, take out every other one for table use. In warm weather, lettuce runs quickly to seed, and should be cut as soon as the

heads are well formed. The heads are ready for the table in from eight to twelve weeks after being planted. Lettuce in the summer is not quite as good, but if planted the first of July, a fine autumn crop may be obtained.

LEEK. Sow in rows, twelve inches apart, about April 25th, cover one inch, and when the plants are well up, thin to three inches apart. When eight or ten inches high, hill up to blanch the stalks. They will be ready to eat from sixteen to twenty weeks after sowing the seed.

MUSTARD. White English is the best table variety. The leaves are used for greens or for salads. It is cultivated the same as Cress.

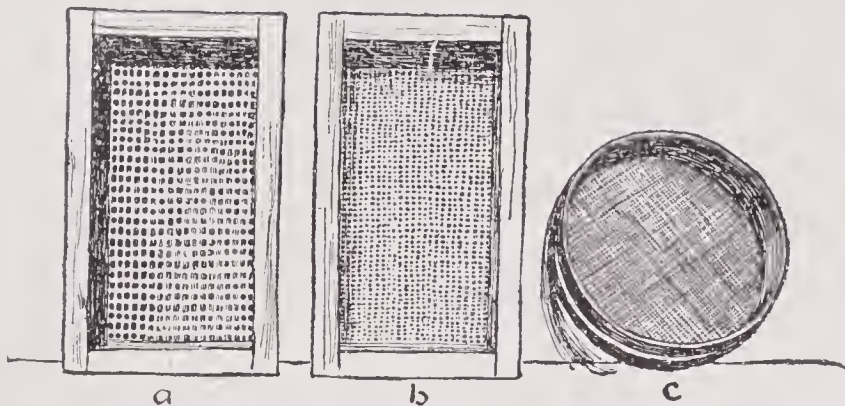
MELONS. Both Musk and Water Melons are treated almost exactly the same as Cucumbers in the garden. For cultural directions, see cucumber.

OKRA. For an early crop of Okra, the seeds may be planted inside, in March, and the plants treated the same as Egg Plant. Out of doors the seeds should be planted about May 20th, in rows two and one-half to three feet apart. The seeds should be covered one inch and the plants should be thinned to eighteen to twenty-four inches in the row. The seed pods are stewed and also used in soup. It will be ready to eat in twelve to fourteen weeks after planting.

ONIONS. Onions form a true bulb and are used in medicine as well as for table use. Sow the seeds as early as the ground can be thoroughly prepared. Hoe a little lime or sulphur into the soil where the row is to be. Make a furrow one inch, and press down over the seeds with a flat board or block. When the little plants are three inches high thin them out to three inches apart.

PARSLEY. It is cultivated for the leaves which are fine and feathery in appearance. It is used for garnishing meats and flavoring soups. It is a biennial and will make an attractive plant for the window garden all through the winter. It is hardy and will stand freezing. It adds to a bouquet of flowers. It is better to sow the seeds in a box in the window garden. For this purpose mix one part soil and

two parts sand. Mix well and sift, placing lumps in the bottom of the box for drainage. Fill the box nearly half full of lumps, broken pots or pieces of brick; then put in



A set of Sieves.

A, half inch Mesh; b, one-fourth inch Mesh; c flour Sieve. Buy the woven wire and any boy can make the first two sieves.

Get the other at the hardware store.

Cut loaned by Doubleday, Page & Co., N. Y.

the fine soil, pressing down the corners with the fingers. Heap the soil up on the box, and with a smooth stick scrape it off level. Place the seeds in the left hand and with the thumb and fingers of the right hand scatter the seed evenly over the surface of the soil. Cover all, sifting a little dry soil through a flour sieve over the seeds, not more than one-eighth or one-sixteenth inch in thickness. Press down firmly and evenly with a block or board; put in the window garden and sprinkle with water thoroughly. Do not allow the soil to dry up. When the young plants are up well, they may be transplanted into pots or other boxes. For this, mix one part of soil, one part of sand and one part of well-rotted manure together. Place a piece of broken earthenware in the bottom of the pot for drainage, then fill the pot about one-third full of the mixed soil; then holding the plant in the left hand so that it is in the center of the pot, fill evenly on all sides; press down firmly but not too hard, thump the pot on the bench or table to settle the soil; take it to the window garden and sprinkle it, placing it in partial shade for a day or two. Nearly all seeds can be planted and potted in this way.



A lesson in potting.

These plants can be set out in the garden six inches apart. Always keep the ground in a good state of cultivation around them.

PARSNIP. Champion Hollow Crown is one of the best varieties. It should be planted in the garden about May 10th, in rows twelve inches apart. The furrows should be made one inch deep. The seed will be up in about two weeks. As soon as they are about four inches high, they should be thinned to three to four inches apart in the row. Parsnips are best, if they can remain in the ground through the winter, being dug as needed. They are much sweeter after they have been frozen. The soil should be deep and thoroughly prepared, the same as for beets.

PEPPERS. Peppers of all kinds should be planted in the window garden, or hot bed about February 15th, and treated in every way the same as parsley or egg plant, un-

til they are set out. They should be set out in rows, twelve inches apart, and twelve inches apart in the row. The peppers will be ready to pick in about twenty weeks after planting.

PEAS. Little Gem or any of the dwarf varieties; if they can be planted against the fence, where they have support, the Stratagem, Champion of England and Telephone are among the best. The Little Gem is one of the best for the garden. Peas are raised for the peas which grow in pods, and are best when they are about the size of buck-shot. The land is prepared the same as for beans, except that the trench is made four inches deep, instead of three, and the peas are covered one inch. Leave the surface above them about two inches lower than the surrounding garden. When they come up, the ground is gradually filled in until it is level. All of the dwarf varieties should mature in from six to eight weeks after planting. *Look for the nitrogen traps on the roots.*

POTATOES. Potatoes belong to a different class of vegetables, in that the part that is eaten is a tuber, a thickened underground stem. The land is prepared by making a trench four inches deep, and hoeing one-half pint of commercial fertilizers into each ten-foot row. The potatoes are cut so that there are two eyes to each piece. Place these pieces ten to twelve inches apart in the trench, and cover them about two inches. When the plants are up, keep the ground well tilled about them, and as they grow, heap up the soil, making a broad hill. Potatoes are about the only plants that it is usually wise under ordinary conditions to hill up. Watch for the potato beetle, which should be killed as fast as found. Rows of potatoes, like peas and beans, should not be closer than two to two and one-half feet apart. Potatoes develop underneath the ground; *they are not roots, but tubers.* The eyes correspond to the buds that you find on stems above ground. They contain a large amount of starch, and are used in starch factories, as well as for table use. Always keep the ground free from weeds and in a good state of tillage.

PUMPKINS. Pumpkins should not be planted in the garden, only around the edges or in the corn, or where they may run over fences and piles of stones. They are treated in every way for garden culture as cucumbers, which see.

RADISH. Hoe one-half pint of market garden fertilizer or a mixture of nitrate of soda and super-phosphate into the soil where the radishes are to be planted. Make a trench one-half inch deep, sow the seeds one inch apart, cover with fine soil and press down. All turnip shaped varieties of radish will mature in three to five weeks, and the longer varieties in five to ten weeks. The radish is grown for its root, which is for table use. It belongs to the same class as turnips, parsnips and beets, all of which should be planted in rows at least one foot apart. Radishes can be planted continuously and always insure a crop.

SALSIFY. Salsify or Oyster Plant should be planted about May 10th, in the garden, in rows twelve inches apart and should be treated in every way the same as parsnips.

SPINACH. Spinach is cultivated for the leaves and should be planted about April 25th. It should be treated the same as beets.

SUMMER SQUASH. Summer Squash is treated in the garden the same as cucumber, which see.

TOMATOES. Tomatoes grow on bushes from eighteen to sixty inches high, according to the kind and the manner of training. The fruit is red or yellow and is for table use, both raw and cooked. The plant yields heavily and is generally one of the best plants for the garden. They should not be planted closer than three feet apart in the row and the rows should be at least three feet from any other crop, except radishes which can be planted within two or even one foot of them when the plants are first set out. The seeds should be planted the last of February or the first of March, in the window garden or hot-bed, the same as egg plant. The plants are potted into three-inch pots as soon as the third leaf is formed. They make nice plants for setting out in the garden about May 15th. In



Two kinds of measuring learned in gardening.

Photo by Edward Mahoney.

setting them, dig a hole so that the plant can be set one to two inches lower than it was growing in the pot. Put the plant into the hole and press the loose soil firmly about the ball of earth. If the weather is dry, water when setting. Stake the plants about July 1st.

TURNIP. The early crop of turnips should be planted about April 30th while the late crop should be planted about July 25th. They are planted in the garden, in rows about one foot apart and thinned to four inches apart in the row. The seed is covered one-half inch. They are often sown broadcast, where early corn is planted, so as to get a crop in the fall. Turnips sown in the last of July should remain in the ground until just before the ground freezes. They can then be packed in pits or in a cool cellar in boxes of sand and keep all winter. The Swede turnip should be planted in the spring about May 10th, in rows about twelve inches apart, as it will require the entire season to develop the root.



First lesson in gardening.

VEGETABLES.

The time set for planting is given as the average time when the crop can be planted in Hartford, Connecticut, on a level loamy soil. When the season is early, the planting can take place about a week earlier, while in a late season it will be about a week later. A difference of five or six days should be allowed for every hundred miles in latitude. The time required for seed to come up will vary according to the condition of the seed, the condition and kind of soil and the temperature. A sandy loam favors rapid germination.

Name of plant	When to plant	Where to plant	How deep to plant inches	Distance apart for Garden Culture		Days required to come up	Kind of plant, how long to mature seed	Weeks after planting before ready to eat	What part eaten	How prepared for eating	What its cultivation teaches, besides tillage, industry, etc.
				In row when thin inches	Rows, inches						
Asparagus	April 30	Nursery	1	1	24	20-30	Perennial	3 (years)	Young Shoots	Boiled, served with white sauce on toast	Use of transformed branches (Type of Leguina, Nitrogen forming bacteria in roots Development of fleshy roots Peculiar form of head Development of buds Storage of food in leaves Development of fleshy roots Peculiar form of storage of food Method and effect of blanching Development of fleshy roots Wind method of pollination Pollination, transformation
Beans, Bush, String	May 10 to July 1	Garden	1-1 1/2	1	24	8	Annual	6 to 9 (weeks)	Pods, also seeds	Boiled, baked	
Beans, Bush, Lima	May 10	Garden	1-1 1/2	4-6	30	14	Annual	8 to 10	Seeds	Boiled and seasoned	Use of transformed branches (Type of Leguina, Nitrogen forming bacteria in roots Development of fleshy roots Peculiar form of head Development of buds Storage of food in leaves Development of fleshy roots Peculiar form of storage of food Method and effect of blanching Development of fleshy roots Wind method of pollination Pollination, transformation
Beets	April 30 to July 1	Garden	1	3	12	6	Biennial	7 to 8	Roots	Boiled or baked, served with butter, [pickled]	
Broccoli	May 20	Garden	1	18	24	24	Biennial	21	Flower-like heads	Served similar to Cauliflower	Use of transformed branches (Type of Leguina, Nitrogen forming bacteria in roots Development of fleshy roots Peculiar form of head Development of buds Storage of food in leaves Development of fleshy roots Peculiar form of storage of food Method and effect of blanching Development of fleshy roots Wind method of pollination Pollination, transformation
Brussels Sprouts	May 20	Garden	1	18	24	6	Biennial	21	Buds in axils of leaves	Boiled, served with sauce, pickled	
Cabbage	March to June 15	*Hotbed Garden	1 1/2	24	24	24	Biennial	14 to 18	Head formed of leaves	Eaten raw, chopped as a relish, salad,	Use of transformed branches (Type of Leguina, Nitrogen forming bacteria in roots Development of fleshy roots Peculiar form of head Development of buds Storage of food in leaves Development of fleshy roots Peculiar form of storage of food Method and effect of blanching Development of fleshy roots Wind method of pollination Pollination, transformation
Cauliflower	May 1	Garden	1	3	24	24	Biennial	12 to 15	Roots	Used in soup, boiled, served with butter	
Celery	March to June 15	*Hotbed	1 1/2	8	24	24	Biennial	20 to 25	Flower-like heads	Raw in pickles, boiled, served with cream	Use of transformed branches (Type of Leguina, Nitrogen forming bacteria in roots Development of fleshy roots Peculiar form of head Development of buds Storage of food in leaves Development of fleshy roots Peculiar form of storage of food Method and effect of blanching Development of fleshy roots Wind method of pollination Pollination, transformation
Celery	April 10 to May 20	*Hotbed	1 1/2	8	24	24	Biennial	20 to 40	Leaf-stem	Raw as relish, boil, served with sauce cream	
Corn, Sweet	April 10 to May 20	*Hotbed	1 1/2	6	30 or 36	8	Annual	20 to 25	Roots	For flavoring soups [with beans, fritters &c]	Use of transformed branches (Type of Leguina, Nitrogen forming bacteria in roots Development of fleshy roots Peculiar form of head Development of buds Storage of food in leaves Development of fleshy roots Peculiar form of storage of food Method and effect of blanching Development of fleshy roots Wind method of pollination Pollination, transformation
Corn, Field	May 10 to July 1	Garden	1 1/2	6	30 or 36	8	Annual	10 to 20	Seeds in ears	Boil on cobs, serve with butter, cut off cobs	
Corn, Pop	May 10 to June 1	Field	1 1/2	6	30 or 36	8	Annual	10 to 30	Seeds	Ground, made into bread, hulled	Use of transformed branches (Type of Leguina, Nitrogen forming bacteria in roots Development of fleshy roots Peculiar form of head Development of buds Storage of food in leaves Development of fleshy roots Peculiar form of storage of food Method and effect of blanching Development of fleshy roots Wind method of pollination Pollination, transformation
Corn Salad	May 15	Garden or Field	1 1/2	6	30 or 36	12	Annual	8 to 12	Leaves	When dried, popped over fire	
Cress	May 1 to Sept.	Garden	1 1/2	6	60 each way	4-11	Annual	5 to 6	Leaves	Salad substitute for lettuce	Use of transformed branches (Type of Leguina, Nitrogen forming bacteria in roots Development of fleshy roots Peculiar form of head Development of buds Storage of food in leaves Development of fleshy roots Peculiar form of storage of food Method and effect of blanching Development of fleshy roots Wind method of pollination Pollination, transformation
Cucumber	April 30	Garden	1 1/2	4 in hill	12 to 24	8	Annual	8 to 12	Fruit	Raw as relish and salad	
Dandelion	May 25	Garden	1 1/2	21	36	11	Annual	15 to 20	Leaves, roots in med.	Raw, pickled, serve with pepper, vinegar	Use of transformed branches (Type of Leguina, Nitrogen forming bacteria in roots Development of fleshy roots Peculiar form of head Development of buds Storage of food in leaves Development of fleshy roots Peculiar form of storage of food Method and effect of blanching Development of fleshy roots Wind method of pollination Pollination, transformation
Endive	February 15	*Star ed Hotbed	1 1/2	12	12	5	Annual	8 to 10	Fruit	Boiled, salad, greens	
Kale	March to July 30	*Hotbed	1 1/2	12	18 to 24	6	Biennial	21 to 30	Leaves	Fried in batter, stuffed and baked	Use of transformed branches (Type of Leguina, Nitrogen forming bacteria in roots Development of fleshy roots Peculiar form of head Development of buds Storage of food in leaves Development of fleshy roots Peculiar form of storage of food Method and effect of blanching Development of fleshy roots Wind method of pollination Pollination, transformation
Kohl Rabi	April 30 to June 1	Garden	1 1/2	6	12	5	Biennial	12 to 14	Root like head	Salad	
Lettuce	May 1 to July 1	*Hotbed	1 1/2	6	12	4-8	Annual	8 to 12	Leaves	Greens	Use of transformed branches (Type of Leguina, Nitrogen forming bacteria in roots Development of fleshy roots Peculiar form of head Development of buds Storage of food in leaves Development of fleshy roots Peculiar form of storage of food Method and effect of blanching Development of fleshy roots Wind method of pollination Pollination, transformation
Leek	March 30 to July 10	Garden	1 1/2	3	12	10	Biennial	16 to 20	Roots or bulb	Boiled, mashed, seasoned with pepper, salt	
Melon, Musk	April 25	Garden	1	4 in hill	60 apart	14	Annual	14 to 16	Fruit	Raw, relish, salad, boiled for greens	Use of transformed branches (Type of Leguina, Nitrogen forming bacteria in roots Development of fleshy roots Peculiar form of head Development of buds Storage of food in leaves Development of fleshy roots Peculiar form of storage of food Method and effect of blanching Development of fleshy roots Wind method of pollination Pollination, transformation
Melon, Water	May 25	Garden	1	4 in hill	60 apart	14	Annual	15 to 20	Fruit	Used in soup	
Mustard	April 25	Garden	1 1/2	6	12	12	Annual	3 to 5	Leaves	Eaten raw	Use of transformed branches (Type of Leguina, Nitrogen forming bacteria in roots Development of fleshy roots Peculiar form of head Development of buds Storage of food in leaves Development of fleshy roots Peculiar form of storage of food Method and effect of blanching Development of fleshy roots Wind method of pollination Pollination, transformation
Onions	April 25	Garden	1 1/2	21	36	10-20	Annual	15 to 25	Roots or bulb	Eaten raw	
Okra	May 20	Garden	1	12	12	10	Biennial	12 to 14	Seeds	Relish, salad, greens	Use of transformed branches (Type of Leguina, Nitrogen forming bacteria in roots Development of fleshy roots Peculiar form of head Development of buds Storage of food in leaves Development of fleshy roots Peculiar form of storage of food Method and effect of blanching Development of fleshy roots Wind method of pollination Pollination, transformation
Parsley	March	*Hotbed	1 1/2	12	12	14	Biennial	3 to 12	Leaves	Boiled, fried, baked and raw	
Parsnip	May 10	Garden	1	12	12	20-40	Annual	20	Roots	Used in soup	Use of transformed branches (Type of Leguina, Nitrogen forming bacteria in roots Development of fleshy roots Peculiar form of head Development of buds Storage of food in leaves Development of fleshy roots Peculiar form of storage of food Method and effect of blanching Development of fleshy roots Wind method of pollination Pollination, transformation
Pepper	February 15	*Hotbed	1 1/2	12	12	14	Biennial	12 to 14	Seeds	Garnishing, soups and salads	
Peas	April 25, July 1	Garden	2-3	1-2 dwarf	30	20	Perennial	6 to 8	Seeds	Boiled, fried, served with butter	Use of transformed branches (Type of Leguina, Nitrogen forming bacteria in roots Development of fleshy roots Peculiar form of head Development of buds Storage of food in leaves Development of fleshy roots Peculiar form of storage of food Method and effect of blanching Development of fleshy roots Wind method of pollination Pollination, transformation
Potatoes	April 25	Garden	2-3	12	12	14	Annual	10 to 20	Seeds	Stuffed, baked and pickled	
Pumpkin	May 25	Garden	1 1/2	2 in hill	1	11	Annual	3 to 6	Roots	Boiled, baked and fried	Use of transformed branches (Type of Leguina, Nitrogen forming bacteria in roots Development of fleshy roots Peculiar form of head Development of buds Storage of food in leaves Development of fleshy roots Peculiar form of storage of food Method and effect of blanching Development of fleshy roots Wind method of pollination Pollination, transformation
Radish	April 30 to Aug 30	Garden	1 1/2	4	12	8	Biennial	25	Roots	Pies, used same as summer squash	
Salsify	May 10	Garden	1	6	12	6	Annual	6 to 8	Leaves	Relish, raw	Use of transformed branches (Type of Leguina, Nitrogen forming bacteria in roots Development of fleshy roots Peculiar form of head Development of buds Storage of food in leaves Development of fleshy roots Peculiar form of storage of food Method and effect of blanching Development of fleshy roots Wind method of pollination Pollination, transformation
Spinach	April 25	Garden	1	4 in hill	36	7	Annual	9 to 12	Fruit	Used to make soup, Mock oyster stew	
Squash Summer	May 25	Garden	1 1/2	36	12	4	Biennial	16 to 18	Roots	Boiled for greens	Use of transformed branches (Type of Leguina, Nitrogen forming bacteria in roots Development of fleshy roots Peculiar form of head Development of buds Storage of food in leaves Development of fleshy roots Peculiar form of storage of food Method and effect of blanching Development of fleshy roots Wind method of pollination Pollination, transformation
Tomatoes	February 15	*Hotbed	1 1/2	4	12	10-20	Biennial	15 to 20	Seeds, Roots	Boiled, flavor with salt, butter, pepper, [used young]	
Turnip	April 30, July 25	Garden	1 1/2	12	12	8	Annual	25 to 30	Leaves	Raw sliced, stewed	Use of transformed branches (Type of Leguina, Nitrogen forming bacteria in roots Development of fleshy roots Peculiar form of head Development of buds Storage of food in leaves Development of fleshy roots Peculiar form of storage of food Method and effect of blanching Development of fleshy roots Wind method of pollination Pollination, transformation
Sweet HERBS	May 10	Outside	1 1/2	12	12	12	Annual	8 to 12	Seeds, Roots	Boiled, mashed, seasoned with salt, pepper	
Caraway	May 10	Garden	1 1/2	12	12	12	Annual	15 to 20	Seeds	Seeds, seasoning, in medicine, roots for food	Use of transformed branches (Type of Leguina, Nitrogen forming bacteria in roots Development of fleshy roots Peculiar form of head Development of buds Storage of food in leaves Development of fleshy roots Peculiar form of storage of food Method and effect of blanching Development of fleshy roots Wind method of pollination Pollination, transformation
Dill	May 10	Garden	1 1/2	12	12	12	Annual	15 to 20	Seeds	Used in pickles	
Lavender	March 1	Inside	1 1/2	12	12	12	Perennial	25 to 30	Leaves	Used in medicine, seasoning	Use of transformed branches (Type of Leguina, Nitrogen forming bacteria in roots Development of fleshy roots Peculiar form of head Development of buds Storage of food in leaves Development of fleshy roots Peculiar form of storage of food Method and effect of blanching Development of fleshy roots Wind method of pollination Pollination, transformation
Sage	March 1	Inside	1 1/2	12	12	12	Perennial	25 to 30	Leaves	Seasoning	
Sweet Majorum	March 1	Inside	1 1/2	12	12	12	Perennial	20 to 30	Leaves	Seasoning	Use of transformed branches (Type of Leguina, Nitrogen forming bacteria in roots Development of fleshy roots Peculiar form of head Development of buds Storage of food in leaves Development of fleshy roots Peculiar form of storage of food Method and effect of blanching Development of fleshy roots Wind method of pollination Pollination, transformation

* Hotbed or window garden and garden. † Hotbed or window box. ‡ Does not do very well in hot weather.

FLOWERS.

Every gardener should grow some flowers. The seeds of most flowers are small and they do not always readily germinate in heavy land. For this reason it is advisable to plant them in the hot-bed or window garden, where they can be cared for and then transplanted when the plants are two or three inches high. With a thoroughly prepared garden they may be sowed where they are to remain and thinned out, but generally the beginner will have better success by treating most of his seeds the other way. A few kinds that do not readily transplant should be sown where they are to remain. All kinds of flower seed can be sown in boxes, the same as parsley, for their culture, see parsley page. The following table will give all necessary additional information.

	When to plant	Where to plant	How deep to plant	Distance apart when thinned or transplanted		Days required to come up	When to transplant into garden	Kind of plant	Color of Flowers	Height Feet	When they bloom
				In row inches	Rows, inches						
Ageratum Mexicanum	April 1 to 15	Inside	1/4	12	15	7	After May 10	Annual	Blue	1-2	June to frost
Alyssum, sweet	March 15 to Sept.	Inside; Garden	1/4	6	12	7	April 30	Annual	White	1/2-1	
Amaranthus globe	March 15, May 10	Inside; Garden	1/4	12	15	7-14	After May 10	Annual	All colors	2	July till frost, everlasting
Aster, China	May 1, May 20	Inside; Garden	1/2	8	12	5-10	May 16	Annual	Blue, white, red	1	August to September
Calendula, Pot marigold	March 15	Inside	1/2	12	15	5-7	May 15	Annual	Orange Yellow	1-1 1/2	July to October
Carnation, (Margaret)	March 15	Inside	1/2	12	15	7-12	May 15	Annual	Pink, white, red variety	1	August to October
Candytuft	April 30 to July	Garden	1/4	6	12	4-9	May 15	Annual; Perennial	Red, white	1	June to October
Castor Oil Plant Ricinus	April 1	Inside	1	48	72	10-20	June 1	Annual	Grown for foliage	4-15	
Coreopsis, Sunshine Flower	May 1	Garden	1/4	12	18	10-15		Annual; Self-sows	Yellow Brown	1-2	July to October
Cornflower, bachelors' button	April 1, May 10	Inside; Garden	1/4	12	15	5	May 15	Annual	Blue, white, pink	1	July to October
Cosmos, Early Dawn	March 15, May 15	Inside; Garden	1/4	36	36	5-10	May 20	Annual	Red, white, yellow	4-8	July to October
Forget-me-not	March 15, May 1	Inside; Garden	1/4	6	6	5	May 10	Perennial	Blue	1 1/2	May to September
Gourds,	May 30	Garden	1/4	12	22	7-20		Annual; Vine	Yellow	10	July, August
Hollyhock,	February, July 1	Inside; Garden	1/2	12	22	5	May 10	Perennial	Rose, maroon, yellow, white	4-6	July to September
Hunnenmannia, Yel. Tul. Poppy	Febr. 1, May 1	Inside; Ga den	1/4	12	15	12-25	May 10	Perennial	Yellow	1	June to October
Larkspur,	Feb. 1, May 10	Inside; Garden	1/4	18	24	6	May 10	Annual; Perennial	All colors	2-7	June and September
Lobelia Erinus	March 15	Inside	1	6	12	15-25	May 10	Annual	Blue, white, pink	1 1/2	May to October
Love-in-a-Puff, Balloon Vine	March 15, May 1	Inside; Garden	1/4	12	18	7-12	May 15	Annual; Vine	White, small	10	July to October
Marigold, African	March 15, May 1	Inside; Garden	1/4	12	18	5	May 15	Annual	Yellow	1 1/2	July to October
Mignonette, Natchez	May 15	Garden; to stay	1/4	12	18	10		Annual	Greenish Sweet	15	June to September
Morning glory	May 10	Garden	1	12	18	5-6		Annual; Vine	Red, white, purple	1 1/2	June
Musk	April 1	Inside; Garden	1	6	12	14	May 20	Annual	Yellow	10	July to October
Nasturtium	Mar. 15, May 10	Inside; Garden	1	12	24	10	May 10	Annual; Vine	Red, Yellow, varieties	1 1/2	April to June, Sept. to Nov.
Pansy	May 1, July 10	Inside; cold frame	1/4	6	12	10-30	April 15	Biennial	All colors	1-2	July to October
Phlox, annual	Mar. 15, May 10	Inside; Garden	1/4	12	18	10-30	May 20	Annual	Red, white, stripe varieties	1	July to October
Pink, China	Mar. 15, May 15	Inside; Garden	1/4	12	12	10	May 10	Annual	Yellow, white, red	3/4	July to October
Poppy	Mar. 1, May 10	Inside; Garden	1/2	12	12	5-10	May 10	Annual	Red, white, mixed	1-2	June
Poppy, California	May 10	Where to stay	1	12	12	5-12		Annual	White, red, all shades	1	
Poppy, Iceland	Mar. 15, May 10	Inside; Garden	1/2	12	12	12	May 10	Biennial	Orange, yellow, white	1	June to September
Poppy, Oriental	Mar. 15, May 10	Inside; Garden	1/2	12	12	7-12	May 10	Perennial	Yellow, white, orange, reddish	1	June to November
Portulaca	Mar. 15, May 10	Inside; Garden	1/2	12	12	7-12	May 10	Perennial	Red, blackeye	1-2	May
Pyrethrum Aureum	June 1	Garden	1/2	6	12	5-15		Annual	Yellow, white, red	1 1/4	July to September
Salvia Splendens Scarlet Sage	Mar. 15, May 10	Inside; Garden	1/4	6	12	15-30	May 15	Annual	White, grown for foliage	1 1/2	August
Snapdragon	February 15	Inside	1/4	18	18	7-14	May 15	Annual	Scarlet	2-3	August to October
Stocks, ten weeks	March 15	Inside	1/4	18	18	10-20	May 15	Perennial	Red, white, yellow	1-2	June to October
Sunflower	May 10	Garden	1/4	8	12	4-8		Annual	Red, white, many shades	3/4-1	July
Sweet pea	May 10	Garden	1	1	3 1/2	7-20		Annual	Yellow	4-10	August, September
Sweet pea	Apr. 15, June 1	Garden	2	1	3 1/2	4-8	May 10	Perennial	White, red, blue, many shades	4-6	July to Oct. if kept picked
Verbena	Feb. 15, May 10	Inside; Garden	1/4	18	24	14-30	May 10	Annual	White, pink, maroon	1	June, September
Wallflower	Feb. 15	Inside	1/4	18	18	7-10	May 10	Annual	White, blue, red, pink, &c	3/4	May to October
Zinnia	Mar. 15, May 15	Inside; Garden	1/4	12	18	5	May 10	Perennial	Reds, yellow, white	1-2	June to October
	April 10	Inside	1/4	12	18			Perennial	Yellow and red	1 1/2	If potted in Sept., will bloom all winter, Sept. to frost

§ Treated as annuals in this climate. * Do not cover. † Use trellises or over stone. ‡ On trellises. All plants marked (§) may be potted the 1st of September and they will bloom in winter inside.

CHAPTER VI.

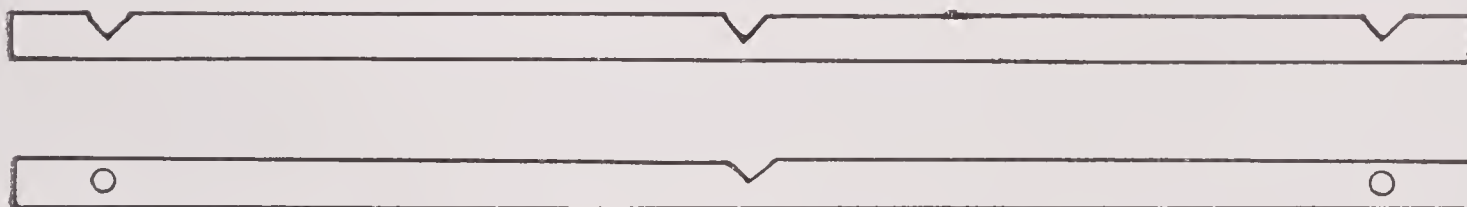
HOW TO DIG AND SET TREES.

TO *dig* a small tree, ten or twelve feet high, dig around it about eighteen inches from the trunk, until below most of the roots; then, put the spade under the tree and lift up, at the same time pressing the top away. Repeat the operation on the other side of the tree if necessary. In the nursery row a man on each side can put the spade down its full length about one foot from the trunk. Both should press the spade, handle down at the same time with one hand and lift the tree out with the other.

Trees should be set as soon as possible after digging. All roots that are broken should be cut with a sharp knife or pruning shears so they will heal quickly. When the roots are very thick and interlaced, as is sometimes the case with nursery trees, the roots should be judiciously thinned. Always try not to leave two branches opposite; they may make a bad crotch. Always cut off all crossing and twining shoots and generally cut back the ends of the branches. One year old (from the bud) peach or apricot trees should be pruned to a single stem.

TO SET THE TREE.

A stake should be placed where each tree is to be set. A planting board should be used, which consists of a strip or board with a notch in the center, and one near each end.

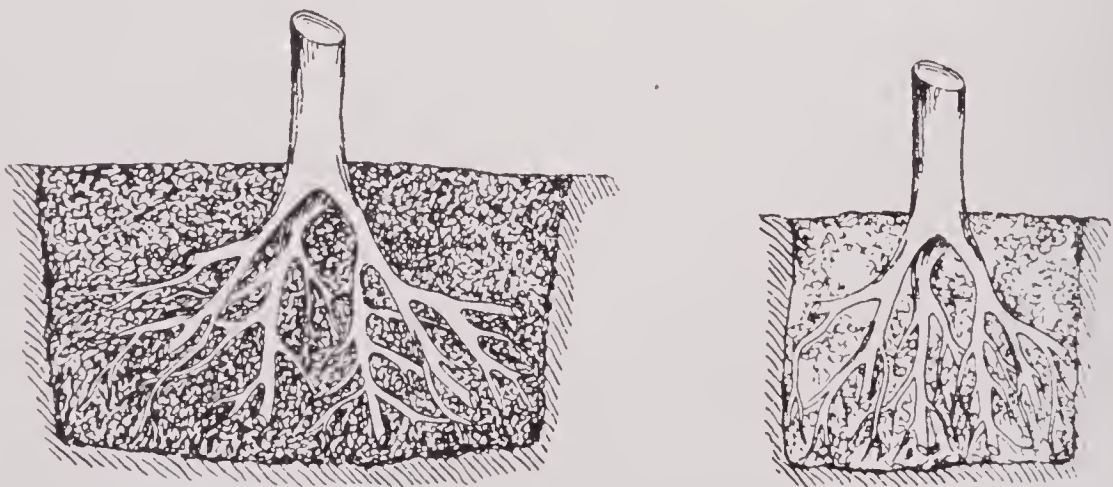


Planting Boards.

It is placed so the center notch comes to the stake where the tree is to set and one stake is placed in each of the end notches. The center stake is then removed and the hole dug. Always have the hole a little too large for the trees' roots. If the soil is poor dig the hole deep, and spade the top soil or some good garden soil into the bottom of the hole. Spread out the roots in their natural position, and fill in the fine soil about them, pressing it in around the roots with the hands.

Place the setting board so the stakes come into the end notches, and have the tree come into the center one. Be sure the tree is set straight. If in a very windy section, incline a little towards the direction of the prevailing winds. In larger trees always place the thickest side towards the direction from which the prevailing winds come.

Trees can be set in the spring, any time after the frost is out of the ground, until the buds start. The ground should be made very firm around the roots and mulch should be kept on top. If late in the season or if the soil is dry the trees should be watered. Watering helps to settle the soil about the roots. Later, mulch the trees with soil or grass. Shrubs are set the same as trees.



Wrong and right way of digging the holes for trees.

CHAPTER VII.

TO MAKE A HOTBED AND CARE FOR SAME.

TAKE two twelve inch planks or boards and stand them on edge for the back, one on top of the other, and one twelve inch plank or board for the front. Nail or screw cleats on them to prevent them from warping. The ends are made five feet, ten inches long and placed inside the sides. Saw one twelve inch board, cut five feet, ten inches long, diagonally and place on top of a twelve inch board of the same length at each end of the bed. Put two by two or two by four inch posts in the corners and nail, screw or bolt the sides and ends to them. The best location is a sunny exposure facing the south or southwest. The best exposure is on the south side of a building or fence as the bed is then protected from cold winds. *The front or low side, should always be towards the sun.* Hotbed sash are generally made three feet by six feet. The glass in them should lap about three-sixteenths of an inch. Sash are made to take six by eight inch, eight by ten inch and ten by twelve inch glass. The latter gives the most light but the sash containing less bars are not quite as strong. Old windows may be used, in which case the bed is made as wide as the windows are long. The edges of the planks should be planed, according to the slant, so the sash fit exactly. If the bed is to remain permanently, the sash may be hinged on the back, or, if there is room, they may slide. It is necessary to put *braces* from front to back of the bed, and it is well to put these every three feet, so the sash may rest on them. The top of them should be nearly, or quite, even with the top of the frame. Two by four inch strips should be used with the ends cut on a bevel so they fit exactly. To get this bevel, place the two by four inch strips on the hotbed frame and hold a straight edged stick or square against the inside of the front and

back of the frame and draw lines on the two by four inch strips. If cut along these lines the strip will slide into place and is then nailed.

When the frame is completed, dig out the soil (inside) to a depth of ten to twelve inches, then fill in with fresh, decomposing, well-mixed horse manure to a depth of one



Preparing the Hot-bed.

foot after it is trodden down. When evenly and well trodden, wet it down and put on about four inches of good soil. Have the manure and soil deeper on the back of the bed so it will slant nearly as much as the glass. Put on the glass. Allow it to remain until the manure heats and the temperature of the manure falls to 90° F. This is obtained by placing a thermometer about two inches into the soil. It will take five to fifteen days. Water thoroughly if dry. When the temperature of the manure and

soil have fallen to 90° F. begin using the bed. If the weather is cold, bank the outside of the frame with strawy manure. For low plants, like lettuce and radishes, the soil may be as near as six inches to the glass. The soil will always settle from two to six inches.

The hotbed is generally started in February or March, but can be started earlier by using more manure. *It must always be in a well drained location.*

THE CARE OF THE BED.

The hotbed needs good and regular care. It is the farmer's greenhouse and in it can be grown a large variety of vegetables or flowers. After the 1st of April the hotbed should generally be watered early every pleasant morning, and whenever dry before then. If the weather is cold the bed should be watered in the middle of the day, when the sash can be lifted for a few minutes.

Much care is needed in ventilating the bed as the decomposing manure will use up the air, and plants cannot make good growth without fresh air. The sun, also, causes intense heat on fair days. Hotbeds should have a little air on fair days even in winter. Generally however, keep the temperature, during bright days, between 60° and 80°, and cloudy days between 50° and 70°. A temperature of 90° or 100°, with the sash partly open, would do no harm, while a temperature of 75° in sunlight, with the bed closed tight, might do harm. On cold and cloudy days only open a very little, for a very few minutes in the middle of the day. *A thermometer should always be in every bed.*

COTTON SHUTTERS are cheap and nearly or quite as good as sash after the danger of heavy frost is past. They are made by tacking cheese cloth over a frame made the same size as the sash. These frames are easily made from planed furring strips. Cold nights the hotbeds should always be covered with mats. In winter, shutters should be placed over the mats. The bed without (heat) manure is called a cold frame.



A Cotton Shutter Frame.

THINGS TO REMEMBER.

- 1st. Decide the location of the hotbed.
- 2d. Decide the size of the bed.
- 3d. Cut the boards the right lengths.
- 4th. Put on the Cleats.
- 5th. Take boards to the location.
- 6th. Arrange boards on ground near where they are to stand.
- 7th. Set up sides and ends and fasten them together.
- 8th. Put in the braces.
- 9th. Dig out the bed.
- 10th. Fill in and tread manure, water and add four inches of soil. Put on glass and keep closed for a few days.

CHAPTER VIII.

STRAWBERRY CULTURE.

THE strawberry is one of the most important of the small fruits. It will grow with a fair degree of success on most any soil. A moist, dark, sandy loam is best. Any soil that will grow a crop of corn or potatoes will grow strawberries. The richer the soil the larger the crop. It should be well drained. If the water level is high, the land should be underdrained, otherwise surface drainage will be sufficient. *The soil should be thoroughly prepared, thoroughly plowed, heavily manured, and thoroughly harrowed* until the surface is fine and mellow before the plants are set. The setting is done either in the spring, summer, or early fall. The early spring is best, unless pot plants are used. In setting, use only the runners. Take them up with a fork. Pick off old, dry leaves. Use only plants with light colored roots and clip off one-third of them. Do not let the sun shine on the roots.

For a garden, set the plants two feet by two feet. Make a marker like a rake with the teeth, two feet apart. Mark the land both ways. A man should mark an acre in half a day. The plants are then dropped by boys at each section. They are set by men who pick them up with their left hands and spread the roots in a fan shape between the fingers at the same time opening the hole with the right hand. Lower the plant into the ground with the left hand, press the soil firmly about the roots with both hands, leaving the crown slightly lower than the surrounding soil. Be very careful not to cover it. One man should set half an acre in a day. If the ground is not wet each plant should receive one pint of water.

For field culture, the plants are often set three feet apart in the rows, with the rows three to four feet apart. Where pistillate varieties are used it is necessary to have

some perfect variety every third row so as to *pollenize* the imperfect ones.

The beds should be kept clean and free from weeds at all times. Train the runners in a circle about the plants. Cover in winter after the ground is frozen, to protect the plants from freezing and thawing. Pine or hemlock boughs, marsh hay, or straw free from weeds are the best covers. Keep them covered till all freezing nights are over. In the spring, apply wood ashes, 500 lbs. to acre, and unless the ground is very rich apply nitrate of soda, 160 lbs. to the acre. The first year it is well to grow some other crop between the rows, such as radish, lettuce, onion sets or even cabbage.



Strawberry Barrel.

THE BARREL METHOD.

Take any strong barrel, nail on the hoops and clinch the nails inside. Then bore two or three holes in the bottom near the sides for drainage. Then beginning about eight inches from the bottom bore holes one and one-half or two inches in diameter, eight inches apart around the

barrel. Make a similar row of holes four to six inches from the top and a row of holes between the two rows. Take an old conductor, land tile or even four laths. Make holes in them, and place in the center of the barrel. Through this the plants will be watered. Use half soil, half manure, with some bone mixed in it. Fill up to the first row of holes, set the plants by putting them inside and pulling out the leaves through the holes in the first row. Fill up the barrel to the second row and set the plants in the same way, and the third row the same. *Always be sure and press the soil firmly, before setting the plants.* Fill the barrel full and set six plants in the top. Many persons can have one or more barrels of strawberries in their yards when they have not room for a strawberry bed. A single barrel may yield fifteen to twenty quarts.



CHAPTER IX.

ASPARAGUS CULTURE.

ASPARAGUS OFFICINALIS, belongs to the *Liliaceae* Family.

Asparagus is a native of Europe and Asia and has been cultivated for 2,000 years or more. It was grown by the Greeks and Romans. The so-called leaves are leaf-like branches. The true leaves are scales and in the axils of these branches arise.

Asparagus is a rugged plant and will live in most any soil. It does best on well-drained, well-manured, and well-tilled soil and for an early crop the land selected should be a warm loam with a southern exposure, if possible. Bulky manures should be used at the start to furnish plenty of vegetable matter. Later use manures rich in nitrogen and potash.

Plant the seed thinly in rows one to three feet apart as early as the ground can be worked easily. In setting the new beds use strong, one-year old plants.

FOR THE GARDEN BED.

Dig out the space to be devoted to asparagus to a depth of eighteen or more inches. Put six or eight inches of coarse manure or compost into the bottom and spade it in well. The top of the bed will then be about ten inches lower than the surrounding garden.

Take the freshly dug roots, and set them on a *little mound* one foot apart each way, spreading the roots as they were growing in the seed bed. Fill in over the roots with two or three inches of loose, rich soil. When the plants start, fill in gradually until level. In the fall as soon as the tops begin to turn brown, cut them and burn them. Cover the beds in winter with a liberal supply of strawy manure. This should be turned under by shallow spad-

ing or plowing in the spring. For the garden, it is best to have a narrow bed or a two foot walk between two narrow beds four feet wide.

FOR FIELD CULTURE.

Set the plants two feet apart in the rows with the rows five or six feet apart. Plow out the rows deep and set the plants eight or ten inches below the surface, covering them two to four inches. Fill gradually by harrowing and cultivating. After the second year begin cutting.

Cut the stalks daily in the early morning, with the asparagus knife, just below the surface, using care not to injure other shoots that are coming up. If the ground is rich and well tilled, the stalks will be nearly one inch through. They should be four to eight inches long.

CHAPTER X.

WINDOW GARDENING.

WINDOW gardening is something more than simply filling a box with plants. We hear green-house construction men speak of the window garden meaning the addition put on the outside of a window thereby making a miniature green-house heated by the sun and the warm air of the room. The Civic Improvement Societies speak of window gardening and window boxes referring to those boxes filled with plants and placed on the outside of tenement houses for the spring and summer. Again, we hear of window gardening and window boxes in the autumn for the cultivation of plants inside the house. Window gardening in its broadest sense includes even more than all these. It includes the preparation of the soil, the artistic filling of the boxes or arrangement of the pots, either inside or outside of the window, and the care and treatment of the plants.

The present methods of heating and lighting by kerosene or gas (not electricity) produce a dry atmosphere which is detrimental to the vegetable growth. In houses lighted by electricity and heated by any system which introduces an abundance of fresh air, the matter is not so troublesome. Too much heat and dry air are harder for plants than insufficient light, but lack of light is also one of the drawbacks of the window garden. Dust and insects do harm but are more easily overcome. On account of the dry air, plants often do better in boxes than in pots because there is more soil space to evaporate moisture, which makes a moist atmosphere about them. Water in zinc pans under the pots accomplishes the same purpose, but the pots should be raised so they do not set in water. Saucers will answer the same purpose but the moisture is likely to pass through the pores and injure the woodwork.

A kitchen makes a fine hospital for sick plants as the moisture from cooking makes a damp atmosphere.

The very best plants for a window garden are those adapted to resist a dry atmosphere and high temperature and insufficient light. They are found among tropical plants with coriaceous leaves with small stomata, such as Palms, Rubber Plants, etc. Flowering plants are best introduced when about to bloom. The best windows for most plants are those with a southern exposure. Trouble is likely to come from the use of unsuitable soil. The best time to take up plants, growing in the open air, for winter bloom inside is generally the last of August. Pot them and put in a shaded place for a few days, sprinkling the foliage during the middle of pleasant weather. Plants so treated will get a good start and bloom during the winter months instead of waiting until Spring as is likely to be the case with plants remaining in the ground till frost comes. Avoid draughts and the application of too much water at the root until the plants have become accustomed to their new quarters.

I will treat briefly of the following topics:

1. Mixing and fertilizing the soil.

For common plants—Geraniums, Coleus, Begonias.

For Palms and Roses.

For Cacti, etc.

2. Selecting and arranging the plants in boxes.

3. Potting and re-potting plants.

4. Propagation.

5. Bulbs.

6. Care of plants.

MIXING AND FERTILIZING THE SOIL.

The preparation of the soil is one of the first and most important points for success in gardening of any kind. It is obvious with plants grown in pots or boxes where the roots are necessarily more or less cramped, that the soil must be rich in available food and in sustaining power.

The mixtures that I shall give will give satisfactory results and are more easily obtained than mixtures often given. Persons having a larger variety of materials at their command usually have a gardener competent to mix the soil to suit the needs of the individual plants.

FOR COMMON PLANTS SUCH AS GERANIUMS, COLEUS, FUCHSIAS, ETC., mix one part of soil, one part of well rotted manure (cow manure if obtainable) spread this on the potting bench (a shutter placed on two horses, or an old table serves the purpose). To a bushel of this mixture apply one quart of bone meal and four quarts of gritty sand, if obtainable; mix thoroughly with the spade and then with the hands until it contains a large amount of air. A sprinkling of air-slaked lime and a pint of tobacco dust will help to rid all objectionable insects. Have the soil moist (neither wet nor dry) and mix it until there are no lumps. Allow this soil to remain over night or for several days and mix again when ready to put the plants into it. This work cannot be too thoroughly done. A spring hot-bed will often furnish sufficiently well rotted manure in the Fall in case cow manure is not to be had.

FOR PALMS AND ROSES use in place of the soil pure clay. This is generally best mixed by allowing it to dry and then pulverizing and mixing.

CACTI of all kinds are not generally suited by the ordinary soil mixtures, and while not very common in the window garden, their odd shapes and the free flowering habit of some species attract attention. For potting them use plenty of drainage and equal parts of mixed soil, sand and brick rubble.

SELECTING AND ARRANGING THE PLANTS.

Everywhere in nature there are societies of plants that grow and thrive together. In selecting the plants for the window box, great care should be exercised, not only to select those that will best harmonize in color and present the best artistic appearance, but to select those that will best grow together under the conditions. A collection

that will do well in a south window will not do well in a north window, and vice-versa. For success do not crowd too many plants into the box and do not expect the box to present its best appearance when first filled; give some room for growth and development. There are two methods of filling: one where all the tall plants are placed at the back of the box and the low ones in front; the other where tall plants are in the center and low plants or vines either side. The latter gives the most lasting effect since when the box is turned about the light is more evenly divided among the different plants. The box should have several one-inch holes in the bottom for drainage and a zinc pan should be placed under it. It should be raised from the pan enough to prevent its setting in water. In the absence of a pan a tight box can be used but will require great care in watering. Outside boxes may be filled in the early spring, even before the frost is out of the ground, with well hardened Pansies or Bellis Plants (*Perennis*) or both. A good assortment will make a very showy box. After the danger of frost is passed and Pansies are not blooming so well, take them out and fill the box with any of the plants given in the list best suited to your exposure, or mixed Petunia seed may be sown among the Pansies and the latter allowed to remain. The Petunias will grow rapidly as soon as the warm weather comes and entirely fill the box with an abundance of bloom. Vines can be used in connection with them. In the Fall, when the flowering plants are killed, they can be pulled up and some hardy evergreens planted, as Spruce, Hemlock, Juniper, or Cedar. In this way the box will look attractive the entire year. In the Spring take out the old soil and put in new. Plants for outside boxes in Spring, February to May: Violets, Pansies, Bellis, Forget-me-nots, and Bulbs. The latter should be planted in the Fall.

FOR SUNNY EXPOSURES: *Achranthus*, *Alternanthera*, *Ageratum*, *Begonias*, *Coleus*, *Cornflower*, *Dusty Miller*, *Marguerite*, *Geranium*, *Petunias*, *Salvias*, *Snap Dragons*,

FOR THE BOX EDGES: Alyssum, Ivies, Lobelia, Morning Glory, Periwinkles (Vincas), Tradescantias, (Wandering Jew), Tropaeolums (Nasturtiums).

FOR SHADY EXPOSURES: Fuchsias, Begonias, Dracaenas, Ferns, Feverfew.

FOR EDGES: Ivies, Periwinkles, Dusty Miller.

Cornflower, Snap Dragons, Verbenas, Marguerite, Feverfew, and Dusty Miller will stand considerable frost. For winter, fill the box with Enonymus, Yew, Spruce, etc. Small Norway Spruce one or two feet high can be obtained for fifteen or twenty-five cents each.

FOR INSIDE BOXES.

FOR SUNNY WARM ROOMS: Cupheas, Heliotrope, Hydrangea, Marguerite, Geraniums, Bulbs, Mignonette, Salvias, Petunias, Jerusalem Cherries, Cytissus, Roses.

FOR NORTH WINDOWS: Begonias, Bulbs, Cyperus (Umbrella Palm), Dracaenas, Ferns, Fuchsias, Myrtles, Rex Begonias, etc.

FOR SCHOOL ROOMS where the temperature is likely to be low between Friday nights and Monday mornings:

WHERE THE TEMPERATURE IS MAINTAINED: Achranthus, Abutilons, Cannas, Dracaena, Dusty Miller, Fuchsias, Feverfew, Geranium, Hibiscus, Myrtle, Gnaphaliums, Pansies, Pinks, Verbenas, Snap Dragons, Violets.

WHERE THERE IS DANGER OF FROST: Forget-me-nots, Verbenas, Feverfew, Snap Dragons, Myrtle, Umbrella Palm, Violet, Pansies, Abutilons, Hibiscus.

All boxes for large plants should be at least six inches deep and should have one or two inches at the bottom or broken pots or brick rubble for drainage; then fill the box about one-half full of soil and set the large plants in position; then fill in soil evenly on all sides, pressing it firmly about the plants, leaving at least one-half inch between the top of the soil and the edge of the box for watering. Smaller plants may be set about the edges. Nasturtium or Sweet Alyssum can be planted, or cuttings

of the *Tradescantia* set out there. If the plants are taken from the ground they are prepared the same as for potting.

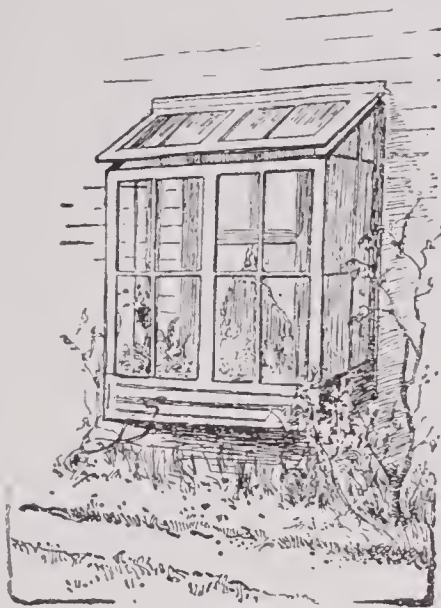
POTTING PLANTS.

POTTING PLANTS FROM THE SOIL. Take the plant up carefully leaving a ball of earth about the roots; crumble this away until it will easily enter the pot, place a few pieces of broken pot in the bottom for drainage and fill it about one-third full of soil; set the plant in the center holding it so the top of the ball of earth is about one inch below the top of the pot; fill in fine soil evenly on all sides and press it down with the fingers firmly. The pots should be clean inside and should be wet before using. Water thoroughly and place in partial shade for a few days. Do not give too much water at the root until the plants start to grow.

To RE-POT, the plant is removed from the pot by inverting it and rapping the rim of the pot lightly upon the edge of the bench. Crumble a little earth from the upper edge, remove the drainage and crumble away the lower edge slightly. Put in enough soil over the drainage to bring the ball of earth about one inch below the top of the pot, place the plant in the center of the pot and fill soil around the ball of earth pressing firmly about the edges. Fill the pot to about three-fourths of an inch below the top, press firmly and rap slightly on the bench to settle the soil; water and place in partial shade for a day or two. In re-potting, generally use pots one inch larger than those from which the plant came. Over-potting is as serious as under-potting. To pot cuttings or seedling plants take one part of sand, one part of soil and one part of manure and pot the same as other plants, filling the pots to within one-half inch of the top.

PROPAGATION.

The window garden is the teacher's greenhouse and in it may be propagated all the early plants for the school garden. Many farmers' wives have no other place to start their early vegetable and flower plants.



Cut loaned by
Doubleday, Page & Co.

North windows in warm rooms for germinating seed and starting cuttings. For starting seed use one part soil and two parts sand, or just the soil if it is light. For taking cuttings, select the younger growth of the plants where the shoots are pretty well matured so that they are not too soft. The tops of shoots generally make the best cuttings. Cut them two or three inches long, trim off the large side leaves; they should then be inserted in clean, sharp sand

at least half their length and wet thoroughly. A deep plate or shallow dish containing about two inches of sand can be used. This can be placed on a radiator or on the back of the stove at night. They should be kept moist, not allowed to dry up, nor should they be overwatered. Bottom heat stimulates root development.

BULBS.

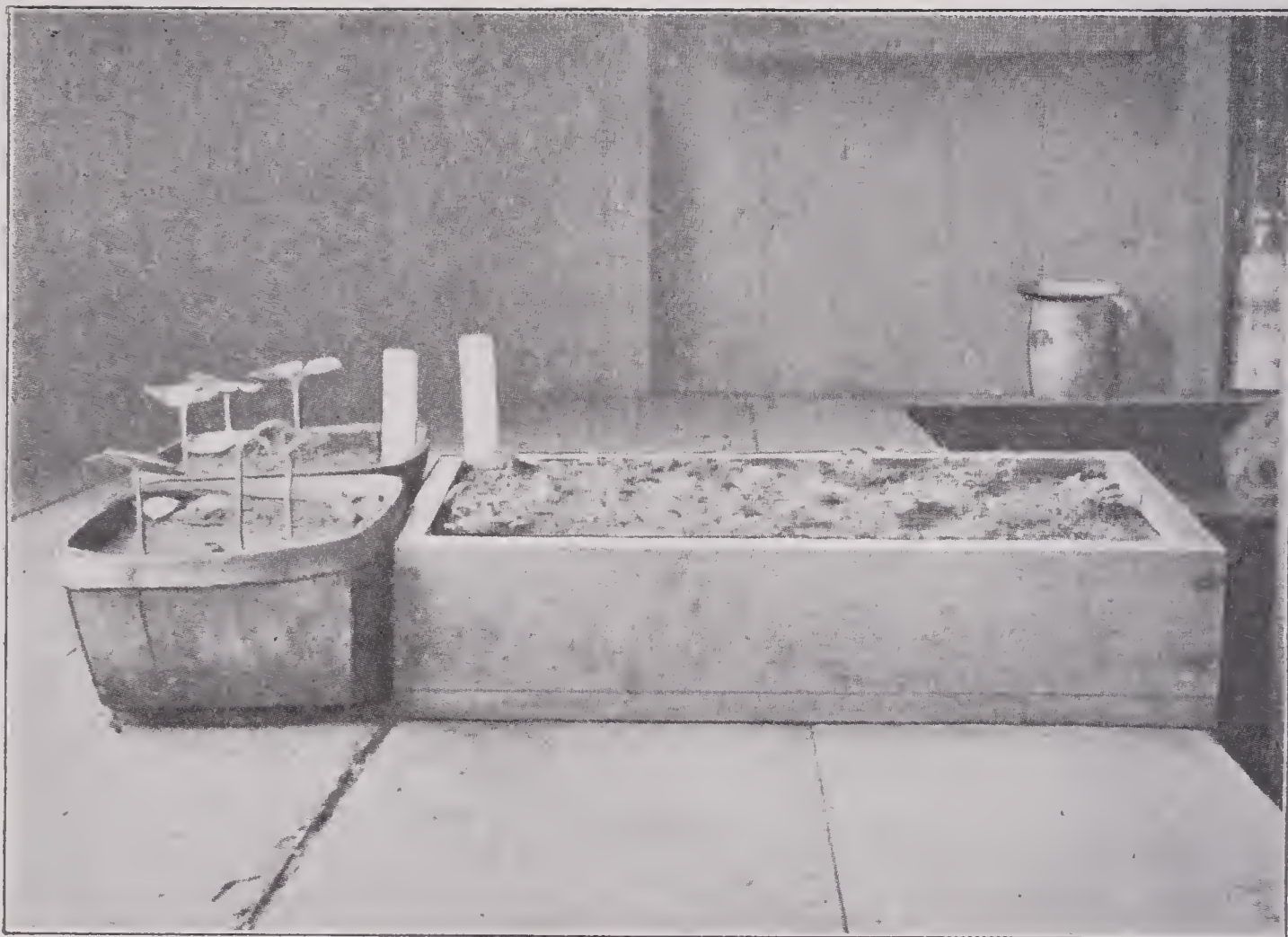
Nearly all our common bulbs can be made to bloom successfully in the window garden, although a cool room will give the best results. The bulb should be potted in the Fall and the pots and boxes containing them should be left out of doors or in a cellar where the temperature is low. They can be brought into the window garden successively and thus obtain a succession of bloom. In potting bulbs, give plenty of drainage and be sure that the soil is not too firm directly under them; otherwise the roots will throw the bulb above the surface of the soil. Most bulbs should be just covered with earth which is pressed firmly around the sides of the bulb. They should not be watered until growth commences. When about to bloom they will require considerable water. The commonest bulbs that do well are: Crocus; Daffodils; Freesias; Hyacinth; Oxalis; Lily of the Valley; and Tulips. Sometimes a window box can be made up entirely of bulb stock, and

while it is in bloom it is very effective. A few bulbs in a window box with other plants, if they are judiciously arranged, will add to it.

CARE OF THE PLANTS.

Water is the most essential element of plant food, and water and air are two things that every plant requires, yet there are no set rules that can be given when these things should be applied. Generally speaking, however, a plant should only be watered when it is dry and should then be watered sufficiently to wet it thoroughly. Sometimes it is necessary to water plants two or three times a day in sunny weather, and again, in cloudy weather, once a week may be often enough. Plants should receive good air. It is well to open a window for a few moments every bright sunny day, even in winter. Dust frequently clogs the pores. For this reason it is best to sprinkle the foliage of plants by taking them to the kitchen sink or to the bathtub at least once or twice a week. If this is not practicable, dusting with a duster or washing coriaceous leaves with a sponge is advisable. Where the plants can be properly sprayed, they are not likely to be troubled very much with insects. In case a single plant is covered with green fly, place a paper bag over it and have some friend who smokes, puff the cigar smoke into the bag. A few times will remedy this trouble. Scale insects, if they once get hold, can only be removed by washing off with a stiff brush, or, if near a florist, have him give it the Hydro Cyanic Acid Gas treatment. Pyrethrum or tobacco dust is also valuable but is generally too objectionable to have in a living room. The best preventative is to always keep the plants in perfect health and growing. The pots or window boxes should be turned frequently so as to have the plants develop symmetrically.

In closing I will only say that it is the loving attention to the little requirements of the plants that is the secret of the greatest success with the window garden. Many of those requirements can only be learned through coming



Seedlings for the Garden.



A Window Box. Boxes in the Window Garden.

into contact with the plants themselves. There are principles, but in window gardening there are hardly two environments that are exactly alike. If you study plants and fulfill their wants, they will nearly always entirely fulfill your wishes in cheering and beautifying your school room or home.



CHAPTER XI.

HOW TO BEAUTIFY THE HOME GROUNDS.

EVERYONE wants to live in a beautiful home, but few understand how to make the surroundings attractive with very little expense.

The object in planting shrubs and flowers is to bring out by a living frame of shrubbery, the central feature of the picture, the **home**.

In order to get the desired effect in planting, three *simple rules* of landscape gardening must be followed:—

- (a) Avoid straight lines and sharp angles.
- (b) Keep open centers.
- (c) Plant shrubbery in masses.

Annual and herbaceous plants alone furnish a frame for the picture for only two or three months a year and have to be replanted often, while shrubs are permanent, and in the end cheaper.

In the following pages the writer endeavors to show how persons unfamiliar with the subject may at little cost make their homes picturesque and help to make the town or city a City Beautiful. Cleaning back yards means not only a more attractive community, but a more healthy one. Cleaning a single yard and making it into a good lawn or garden, especially if it be in a community where the homes are not well kept, will do much to change the entire neighborhood, not only from an æsthetic, but from a moral and sanitary standpoint as well. As disease and crime breed largely in filth and darkness, healthy, law-abiding citizens develop amid well-kept homes.

Small beginnings even in the poorly kept homes in a city, in time transform barren yards of sand and weeds into grassy lawns brightened with foliage and flowers. The expense of carrying out the plans here suggested is within the means of the day laborer. Owners of large



Before



A little effort transforms a barren place into
a beautiful home.

estates usually secure landscape artists to plan the grounds, and have gardeners who understand how to plant them. No attempt is made to give advice to landscape artists or professional gardeners. It is hoped that those unlearned in the art of home decoration, may find in these pages, inspiration and help to make their homes attractive that each may do his share towards making a City Beautiful.

GRADING.

Before any planting is done the grounds should be properly graded. After the rough work is finished, good results are obtained in the following manner. Provide plenty of stakes and a strong linen cord. Drive a stake in each front corner so that the top of each stake is just six inches above the proposed grade at that point. Stretch the cord across the tops of the grade stakes. A cheap, heavy cord will sag or be blown by the wind, while a light, strong, linen cord may be drawn so it will not sag. Bring the grade to the desired height about the underpinning of the buildings. Allow for settle about two inches. Roll down. Drive stakes every ten feet, around the buildings. Cut a notch in them six inches above the finished grade. Drive stakes every ten feet along the front line, cutting a notch at the height of the line. Stretch a cord from a stake near the building to the one opposite it on the street line. Provide every workman with a stick six inches in length. With a rake, level the lawn so that the soil is just six inches below the line as shown by the measuring sticks. Rake off the high places and fill up the hollows. Move the line from one set of stakes to another until the grading is complete. Roll the lawn. This usually shows low places, places which may have been graded well but the soil was soft or filled beneath and settled more. Rake down high places to fill low places and roll again. The lines may be put on again to verify the grade. For a perfect lawn continue rolling and filling up the depressions until perfectly smooth. Then rake it lightly and sow lawn grass seed thickly broadcast over the surface. In localities where the soil is light or sandy and where seasons may be dry and the sun very hot causing the lawn to burn, better results may be had by sowing the seed with a seed drill, putting the seed three to five inches deep. Good blue grass lawns may be had in the South by deep seeding. Lawns seeded in this way in good soil do not burn in

summer. The lawn should now be thoroughly rolled. The best seeding time is before the first of June, or in August, in Northern states. In the South, the seed should be sown one to two months earlier in spring and later in fall. If the weather is dry it may be necessary to keep the lawn watered. This should be done with great care to prevent washing. A good lawn grass seed may be bought, or mix two lbs. recleaned red top, two lbs. Kentucky Blue grass, two lbs. Bent grass, and 4 lbs. white clover seed. If no clover is wanted in the lawn, omit it.

FERTILIZING.

When grading a lawn, thoroughly fertilize by a coating of stable manure about three inches below the surface. This may be two inches thick. The top layer should be good loam. Stable manure not only furnishes plant food but changes the mechanical condition so the lawn will seldom need water when the grass is well started. In preparing the lawn, before the final grading is done, observe the rules for soil tillage in Chapter III.

HOW TO MAKE THE LAYOUT.

As most of us have to deal with the planting of places on which a house already is erected, the greater part of this chapter will be devoted to directions and suggestions for such plantings. Many of the suggestions will apply



Transforming the appearance of the unsightly fence

equally well in selecting and planning a building site. Always remember the three simple rules for landscape planting. If shrubs are already scattered over the lawn (spotty planting) they should be carefully replanted in masses according to the plan. This work should be done toward the close or at the beginning of the dormant period. This would mean that the planting should be done between March 15 and May 1st, or during the month of October, in a latitude of Boston. There is a difference of about six days for every 100 miles north or south. Before planting anything a plan of the grounds should be made on paper to a scale, i. e. $\frac{1}{4}$ or $\frac{1}{8}$ inch on paper should equal one foot of the land. A plan is easily made by using paper ruled both ways and allowing a foot of land for each line. First put a stake at each corner, then put a string across the front and measure the distance under the line. For this a yard stick or rule will do, but much care must be taken that the measure is always under the line. If a 100-foot tape is used a string is unnecessary. Measure all sides the same as the front. Thus, if the lot measured 50 feet front by 100 feet deep, and was rectangular, the plan would be $12\frac{1}{2}$ inches by 25 inches on a scale of $\frac{1}{4}$ inch to the foot. Measure in a straight line from each front corner of the house to the front line of the lot and to the side line nearest it. Make dots on the plan already drawn and locate the house corners. Connect the dots with a line; measure for the rear corners of the house in the same manner and for all projections. Connect the points until a complete ground plan is made of both the house and the lot. In the same manner locate any existing shrubs or trees that are to remain. All shrubbery as well as herbaceous plants should be planted in spaded borders. Never put shrubbery in pot-holes in the lawn. Plant out the underpinning of the house and around the boundary lines to make the **home** a perfect picture with the **house** its central feature set in a living frame work of shrubbery. Where the grounds are large enough, groups of shrubbery planted at the corners of both the lot and building with a



Before



After planting



Masses of shrubbery connected by thinner plantings
with artistic curves

continuous line of shrubbery connecting masses with artistic curves give a pictorial effect. Where the house and lot is small, plant groups of shrubs in the corners and connect with shrubs planted nearly in a straight line. This may be a formal or a broken or informal hedge. For the narrow hedge, plant Japanese Barberry (*Berberis Thunbergi*), Privet (*Ligustrum Iobota* or *L. ovalifolium*) or box (*Buxus*), [see Chapter XII for what to plant.] Where space permits the broken, flowering hedge made up of shrubs that will give a continuous bloom the entire season is very effective. In selecting shrubs and locating them on the plan put large growing shrubs and those with large showy flowers, like the Hydrangea well in the background. Plants with bright red flowers and all strong colors should be placed in the background or the passer will see only the bright flowers which will detract from the central feature, the **home**, but if properly placed a harmonious picture is made. Small and delicate flowers are never seen if placed behind

showy ones while their beauty is brought out to its fullest extent in front of them. Indicate on the plan by a circle (○) or in some other manner the place where the shrubs should be set; put a number in the circle and the same number in the margin of the plan with the name of the shrub after it. Do not select shrubs wholly from nursery catalogue descriptions. Look over your neighbor's shrubs, those in the parks, and those growing wild along the highways. As kinds that will look well about the home are found, indicate them on the plan. Plants may be grown from cuttings or layers and the home planted without a money expense, [see Chapter XIII.] This will take several years but as good results may be had. Most shrubs planted in groups of the same kind may be set as far apart as they naturally grow high. For quick effects,



Spotty planting

however, they are often set closer and thinned as they crowd. Mixed shrubs of two or three harmonious kinds may be planted closer than groups of the same kind.

If the plan is made in winter, then, when the purchased or collected shrubs arrive they may at once be set in their proper places. With no plan, the tendency is to set out each shrub individually, as secured. This produces a spotty effect, helter skelter planting, which, while each shrub may be beautiful in itself, leaves the whole effect extremely unsatisfactory.

HARMONY.

It is important that shrubs be used which harmonize with each other and their surroundings. Tall shrubs



A vine-covered porch with well massed plantings

should be used at the back; low ones in front; flexible ones each side of the basement windows through which coal or wood must pass. Group flowering shrubs that harmonize. Consider both the bloom and foliage of any plant in setting it. Never use plants with bright red or large, showy flowers in front of the house, but rather to one side and well back, bringing those of more delicate colors to the front. This shows up all to a better advantage, and brings out the **home** as the central feature. Climbing vines may be planted to advantage on porches and fences. Often two or three kinds are preferable to a single variety, but do not mix too many kinds. Plants that die to the ground each fall and annual flowering plants add to the shrubbery border, especially when planted in front of the shrubbery.

CONDITION.

The attractiveness of any home depends much upon the condition in which it is kept. Shrubs and plants should always be in well tilled borders, never in pot holes in the sod. The edges should be well trimmed and the lawn well weeded and often mown. The appearance of many otherwise well-kept places is spoiled by the weedy condition of the gutters. Everyone who does anything makes mistakes, but when a shrub is found to be out of place change it the following autumn or spring. The plan should be a constant study until it is complete. The lawn is the outdoor parlor. Artistic taste, there developed, is soon shown inside the home. Gardening is contagious. The example of the well-kept home influences the neighborhood. The work of one man beautifying his home will often inspire persons living near to improve their surroundings, and they in turn inspire others until the whole community takes on a neater appearance, and the first move is made toward making a beautiful town or city and a much healthier one.

CHAPTER XII.

WHAT TO PLANT.

THIS chapter should be carefully read in connection with the preceding one. After the general layout is planned, the natural question is, "What shall we plant?" It is not necessary nor wise to answer this question by any set lists. Many shrubs do equally well under the same conditions. Select those you most admire. The following lists are by no means complete. They comprise shrubs that are perfectly hardy and will help suggest plants to select. Remember that the food and care of a plant is as important as the exposure. Often sun loving plants will do fairly well in shade if they have good care (good soil well fertilized and tilled).

TALL PLANTS—6 feet and higher

FOR SHADE OR NORTH SIDES

Common Barberry
Berberis vulgaris
Purple Leaf Barberry
Berberis var. purpurea
Azalias
Nudiflora and viscosa
(Peaty Soil preferred, no lime)
Judas Tree or Redbud
Cercis Canadensis
Sweet Pepper Bush
Clethra Alnifolia
Red Twigged Dogwood
Cornus Stolonifera
Blue Dogwood
Cornus alternifolia
Flowering Dogwood
Cornus Florida

FOR OTHER EXPOSURES

Common Barberry
Berberis vulgaris
Purple Leaf Barberry
Berberis var. purpurea
Siberian Pea
Caragana aborescens
Button Bush
Cephalanthus occidentalis
Red Bud
Cercis Canadensis
White Fringe
Chionanthus Virginica
Sweet Pepper Bush
Clethra Alnifolia
Red Twigged Dogwood
Cornus Stolonifera

FOR SHADE OR NORTH SIDES

Cornelian Cherry
 Cornus Mas
 Yellow Twigged Dogwood
 Cornus Stolonifera lutea
 Hazel Nuts
 Corylus avellana
 Purple leafed Hazel
 Cornus var. *purpurea*
 Hawthorns (partial shade
 and sun)
 Crataegus
 Golden Bell
 Forsythia
 Japanese Witch Hazel
 Hamamelis Japonica
 American Witch Hazel
 Winterberry
 Ilex Verticillata
 Bush Honeysuckle
 Lonicera
 Mock Orange
 Philadelphus Coronarius
 Nine Bark
 Spiraea Opulifolia
 Golden Nine Bark
 Spiraea Opulifolia var.
 Aurea
 Bridal Wreath
 Spiraea Prunifolia
 Snowballs
 Viburnum
 Chaste Shrub
 Vitex Agnus Castus
 Weigelia
 Diervilla

FOR OTHER EXPOSURES

Blue Dogwood
 Cornus alternifolia
 Cornelian Cherry
 Cornus Mas.
 Hazel Nuts
 Corylus avellana
 Rose Box
 Coloneaster Simonsi
 Pearl Bush
 Exochorda grandiflora
 Golden Bell
 Forsythia
 Althaea or Rose of Sharon
 Hibiscus Syreacus
 Witch Hazel
 Hamamelis
 Winterberry
 Ilex Verticillata
 Bush Honeysuckle
 Lonicera
 Mock Orange
 Philadelphus Coronarius
 Nine Bark
 Spiraea Opulifolia
 Golden Nine Bark
 Spiraea Opulifolia var.
 Aurea
 Bridal Wreath
 Spiraea Prunifolia
 Snowballs
 Viburnum
 Chaste Shrub
 Vitex Agnus Castus
 Weigelia
 Diervilla

MEDIUM SHRUBS—3 to 6 feet

SHADE

Japanese Barberry
Berberis Thunbergii
 Sweet Shrub or Spicebush
Calycanthus Laevigatus
 Japanese Red Bud
Cercis Japonica
Deutzia Lemonei
 Privets (all kinds)
Ligustrum
 Globe Flower
Kerria Japonica
Philadelphus Aurea
 Purple Plum
Prunus Pissardi
 Sweet Sumach
Rhus aromatica
 Yellow Flowering Currant
Ribes aureum
Spiraea Arguta (white)
Spiraea Bumuldi (pink)
Spiraea Anthony Waterer
 (crimson)
Stephanandra Flexuosa
 Snowberry
Symphoricarpus racemo-
sus
 Coral Berry
S. Vulgaris
 Lilacs (Do not bloom as well
 in shade)
Syranga
 Snowballs
Viburnus

SUN

Japanese Barberry
Berberis Thunbergii
 Sweet Shrub Spicebush
Calycanthus Laevigatus
 Jersey Tea
Ceanothus Americanus
 Japanese Red Bud
Cercis Japonica
Deutzia Scabra
Hyrangea var. Grandiflora
Kerrias
 Purple Plum
Prunus Pissardi
 White Kerria
Rhodolypos Kerrioides
 Rose Acacia
Robinia hispida
 Roses all kinds
Spiraea Thumbergi
 All Spraeas
Spiraea Van Houti
 Snow Berry
Symphore corpus racemo-
sus
 Coral Berry
S. vulgaris
 Lilacs
Syranga
 Snowballs
Viburnus

LOW SHADES—Less than 3 feet

SHADE	SUN
Japanese Barberries	Japanese Barberries
Berberis Thunbergii	Box
Box	Deutzia Gracilis
Buxus	St. John's Wort
St. John's Wort	Hypericum aureum
Hypericum Aureum	Winterberry
Winterberry	Ilex Verticullata
Ilex Verticullata	Privets (all kind)
Privets (all kinds)	Cinquefoil
Trimmed any height	Potentilla fruticosa
Philadelphus	Viburnum Nannis.
Var Nannis	
Cinquefoil	
Potentilla fruticosa	
Liburnum var. Nannis	

For tall screens or green wall backgrounds both sun and shade : Lombardy Poplar (*Populus fastigiata*), Norway Spruce (*Picea excelsa*). Japanese Cedar (*Retinispora Plumosa*), Arbor Vitae (*Thuya occidentalis*), Hemlock Spruce (*Tsuga Canadensis*.)

VINES

Self Clinging Vines :

Boston Ivy (*Ampelopsis Veitchi*)

English Ivy (evergreen, *Hedera helix*. Good only for north sides, north of New York, and where the atmosphere is moist.

Euonymus radicans (evergreen, small)

Virginia Creeper (*Ampelopsis quinquefolia*)

Vines Requiring a Treelis for Climbing or Twining :

Trumpet Vine (*Tecoma radicans*)

Actinida arguta

Bitter Sweet (*Celastrus scandens*)

Matrimony Vine (*Lycium Barbareum*)

Climbing Hydrangea
Clematis
Evergreen Honeysuckle (*Lonicera brachypoda*)
Golden Leaved Honeysuckle, var. aurea.
Wistaria
Sweet Scented Grape (*Vitis riparia*)
Akebia quinata
Dutchman's Pipe (*Aristolochia siphon*)
Crimson Rambler
Dorothy Perkins or Pink Rambler
Baltimore Belle Pale blush Rose

HARDY PLANTS THAT DIE TO THE GROUND EACH YEAR :

Among the many kinds of tall ones are: Plume Poppy, Aster, Boltonia, Larkspur, Herbaceous spiraeas, Hibiscus or Mallow, Hollyhock, Foxglove, Hardy Sunflowers.

Medium and low:—Peony, Sweet William, Bleeding Heart, Baby's Breath, Iris, Phlox, Grass Pink, Forget-Me-Not, Colombine, Anemone, Chrysanthemums, and all bulbs.

This is by no means a complete list, but plants and shrubs here mentioned are perfectly hardy in nearly all parts of the United States, and will respond favorably to good treatment. They are listed to suggest what to plant. Full descriptions may be had in any Nursery Catalogue, or in Cyclopedias, found in the library.

CHAPTER XIII.

CARE OF TREES AND SHRUBS

CONTRARY to the general idea, trees and shrubs, when once set in place, respond to intelligent care. While they may live and grow without it, tillage is essential to the best results. This subject will be briefly treated under the headings, Propagation, Transplanting, Pruning, and Care.

PROPAGATION

There are many ways of propagating plants. The commonest are by seeds, cuttings, layering, and grafting. Annual plants are propagated almost wholly by seeds. Trees and shrubs may be propagated in the same way. The seeds may be planted in the autumn from one to two inches apart in rows in any well prepared soil. A sandy loam containing much humus is the best. Some seeds do not germinate the first year. The young seedlings must be kept weeded and the soil well tilled. Reproduction by means of cuttings is a quicker method for many kinds of shrubs, although but few trees readily reproduce in this way in our northern climate.

CUTTINGS

Soft cuttings of shrubs are best made from new growth between first of July and middle of August. Take the ends of twigs about four inches long. Make a clean cut on the lower end with a clean, sharp knife. Trim off the side leaves and if the top ones are large cut off the upper half. Fill a gardener's "flat" or any box about four inches deep, with an inch of cinders or small brickbats for drainage and then fill the box with clean, sharp mason's sand. Press the sand down and wet it. Set the cuttings in rows making the opening with a knife or stick. Put them two to three inches deep, and as thick as they will stand. The

cut on the twig should be made just beneath a node (where the leaves were). Place the box in a hot-bed or cold frame and cover with a lath or cotton shutter. In the absence of a hot-bed put in the shade of a tree. Do not allow it to dry up. In about six weeks some of the cuttings should have rooted and may be set two or three inches apart in rows in the garden in the well prepared soil. The best time to transplant it is on a rainy day or after a rain when the soil is moist. Some shrubs will be ready to set permanently in one year; others will require two or three years.

Hard wood cuttings are taken in the fall, winter, or early spring. Often the branches pruned are used for these cuttings. They are made six or eight inches long and may be put directly into the soil if it is ready in fall or spring. If cuttings are made in winter, store them laying them flat in boxes of sphagnum moss, or sand until spring. They are set in rows, using either a dibber or spade. Only one bud should be left above the ground and at least two should be below the surface. The soil should be pressed firmly about the cuttings.

LAYERING

Layering is a very simple and natural method of reproducing shrubs. It consists of laying the lower branches down and pinning them down with earth. They soon root. The branch is then cut off and an independent plant established. This may be large enough to set in its permanent place when first transplanted the following spring.

GRAFTING

Propagation by grafting is practiced to produce quicker results than other methods of reproduction. Grafting is the art of placing a portion of one plant upon another related plant in such a manner that the growing tissues of each coincide and union takes place. The plant grafted is the *stock*. The part grafted into the stock is called the *scion*. Grafting is practiced on many trees that do not come true from seed, such as apples, pears, etc.

(The fruit borne on grafted trees is the same variety as that from which the scion is taken.) *Cleft grafting* is often practiced to obtain results from seedlings in the shortest possible time. It is also used to change the fruit upon any tree to a more desirable variety. It is not as difficult to graft as many believe. A careful boy of ten years often has as good results as an experienced gardener.

ROOT GRAFTING

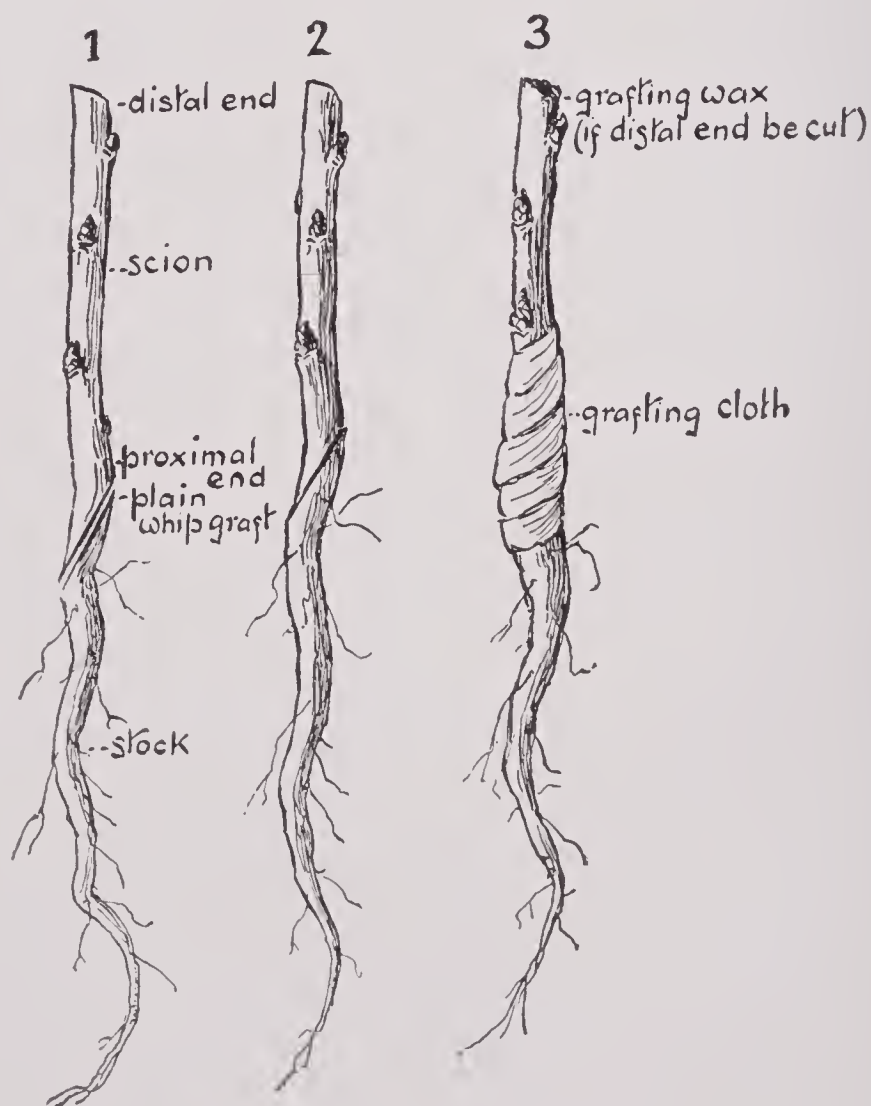
Root grafting, as the name implies, is the placing of a scion of the desired variety upon the roots of some other. Apple or pear seedlings one or two years old furnish good stocks. Fruit trees and many varieties of ornamental trees, shrubs and roses are root grafted. The scions can often be gathered. They should be the short sprouts of the previous year's growth. They are best selected from thrifty trees on or near the ends of fully exposed branches. In selecting scions avoid long sap-sprouts with long spaces between the buds or nodes. They may be gathered at any time when not frozen, after the leaves drop until the buds swell in the spring. If not used immediately, they should be kept covered with damp moss in a cool moist place to keep them fresh and plump. Different varieties should always be marked. The stocks or roots may be stored in the same manner and used at any time in winter. A common shoe knife which may be purchased for ten or fifteen cents makes an excellent knife for root grafting when kept sharp. The stock and scion must be kept in place until they unite. For this purpose grafting cloth is perhaps the best. It is easily made as follows:

For grafting cloth melt together over a slow fire four parts of unbleached resin and one part of beef tallow or raw linseed oil. Spread this evenly over cotton cloth with a brush or stick. The cloth should be tacked over a board or box and kept warm so the mixture will spread evenly. When cool roll and tie up in a waxed or oiled paper. Keep in a cool moist place until needed. When used, it should be cut in strips about one-fourth inch wide. There are

several simple methods of root grafting; three, whip grafting, tongue grafting, and saddle grafting, will be explained. In each case it is necessary to get the growing tissues (cambium layers) to coincide. If they do not, they will fail to unite. This growing tissue, or cambium layer is just inside the inner bark. Before grafting, the tops of the seedlings should be removed as the roots only are to be used. Thoroughly wash the roots (this is very essential in order to keep the knife sharp). Cut them into pieces five or six inches long. Each piece more than one-eighth inch thick will make a root graft. When the upper or distal end of the scion has been cut, the cut surface should be covered by grafting wax.

WHIP GRAFTING

For plain whip grafting, make long slanting cuts on the upper end of the root and the lower end of the scion so

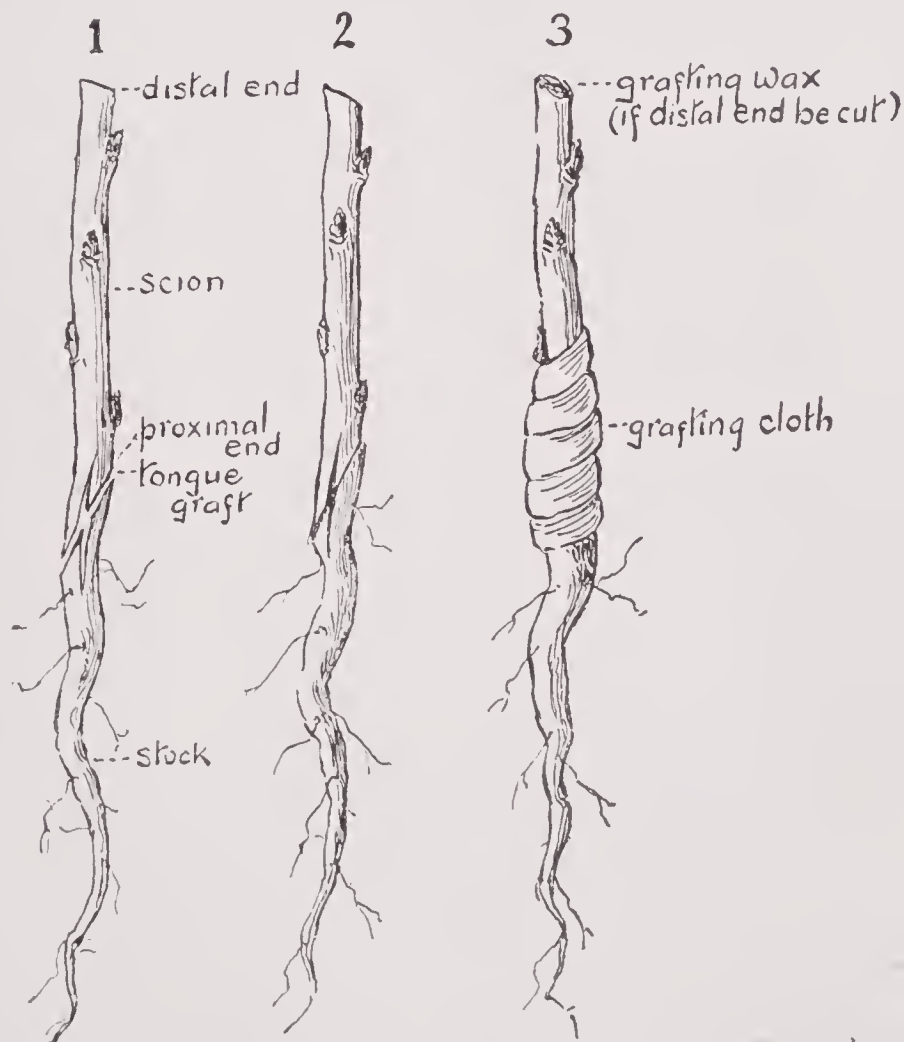


PLAIN WHIP-GRAFTING

that they just match each other. Place them so the cambium layer of the stock and scion coincide and bind firmly with grafting cloth cut in strips about one-fourth inch wide. Begin winding well below the union and continue spirally up over it. The scions should not be over four inches long. This method is used on brittle woods as raspberries and blackberries, as well as on apple and pear seedlings.

TONGUE GRAFTING

Make a clean, long, slanting cut on the upper end of the stock. Select a scion about the same size and make a similar cut on the lower end of it. Both cuts should be clean, smooth and match each other. Make a little tongue in each by cutting out a small wedge-shaped chip as shown in the cut. Press stock and scion firmly together so that the tongues dovetail. Be sure the inner bark of stock and

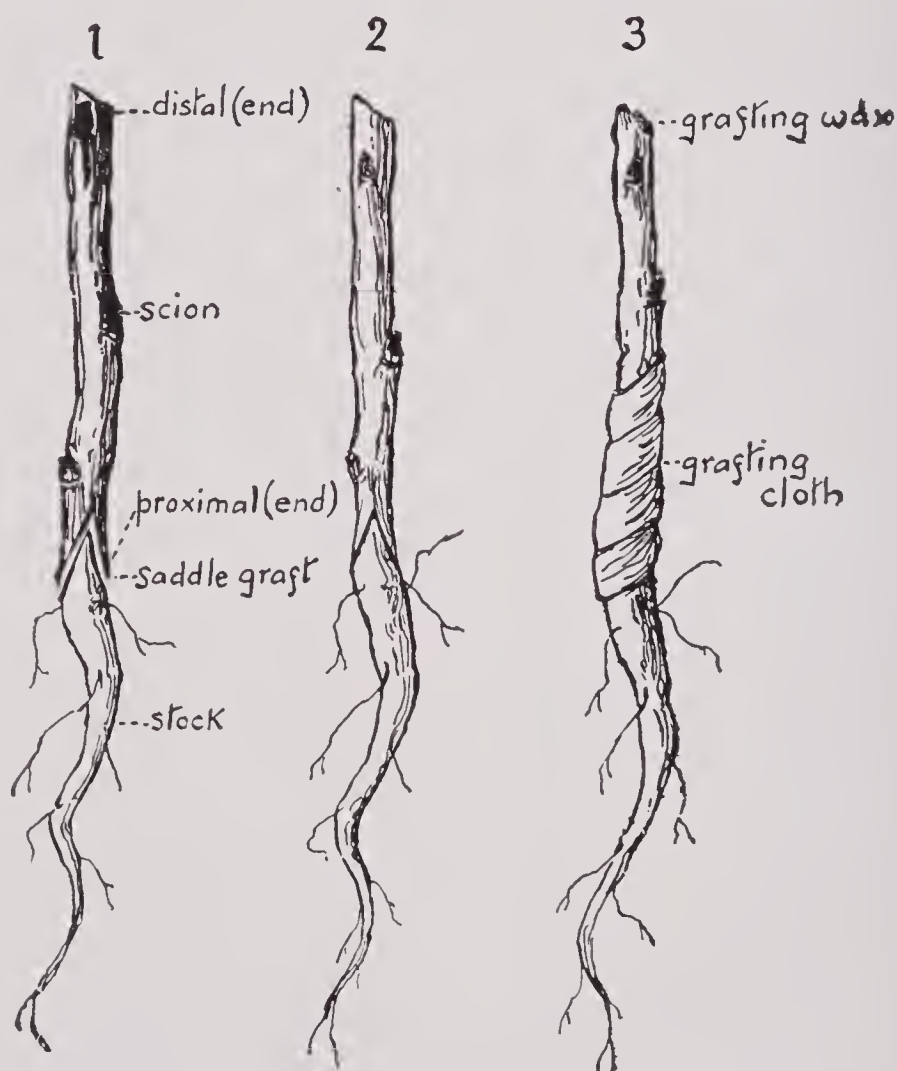


TONGUE-GRAFTING

scion coincide. If they do not fit exactly, take them apart and try until they do. If scion is smaller than the stock it must be carried to one side. Bind firmly with warm grafting cloth one-fourth inch wide, beginning well below the union, winding spirally until above the cut. This method is used with tough wooded plants as the apple, the rose, etc. As the tongues hold stock and scion together firmly, it is a better method than plain whip grafting.

SADDLE GRAFTING

Make a clean slanting cut on each side of the upper end of the root, and a corresponding V-shaped cut on the



SADDLE GRAFTING

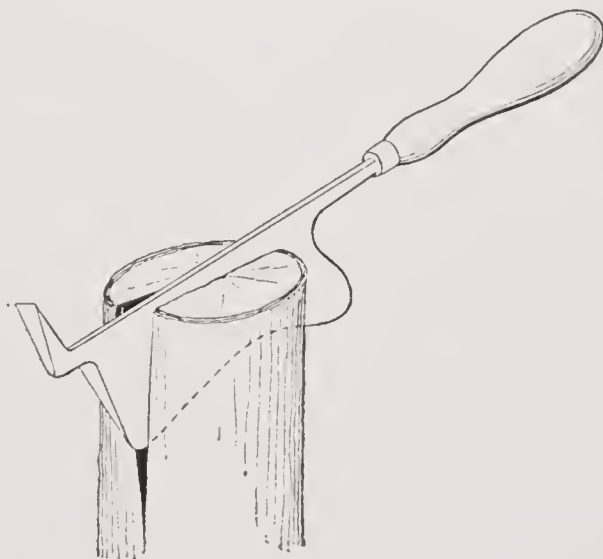
scion. When these fit exactly, bind them together with grafting cloth. Never allow the hands to touch the cut surfaces.

TO PLANT ROOT GRAFTS

Prepare the soil as for any crop by spading or plowing and harrowing thoroughly. Stretch a line where the first row is desired. Put the spade down the full length of the blade under the line. Move it back and forth to increase the opening. Remove the spade and press the root graft into the ground until the top is only an inch above the surface. Press the soil firmly about it with the heel. Continue to place root grafts under the line every four to six inches. The graft should be inserted into the soil well below the union to encourage roots in the scion and to prevent the stock from sending up "suckers." In a small garden root grafts may be planted in rows two feet apart, but if there is space enough to cultivate with a horse, the rows should be three to four feet apart. Hard wood cuttings should be planted in the same manner.

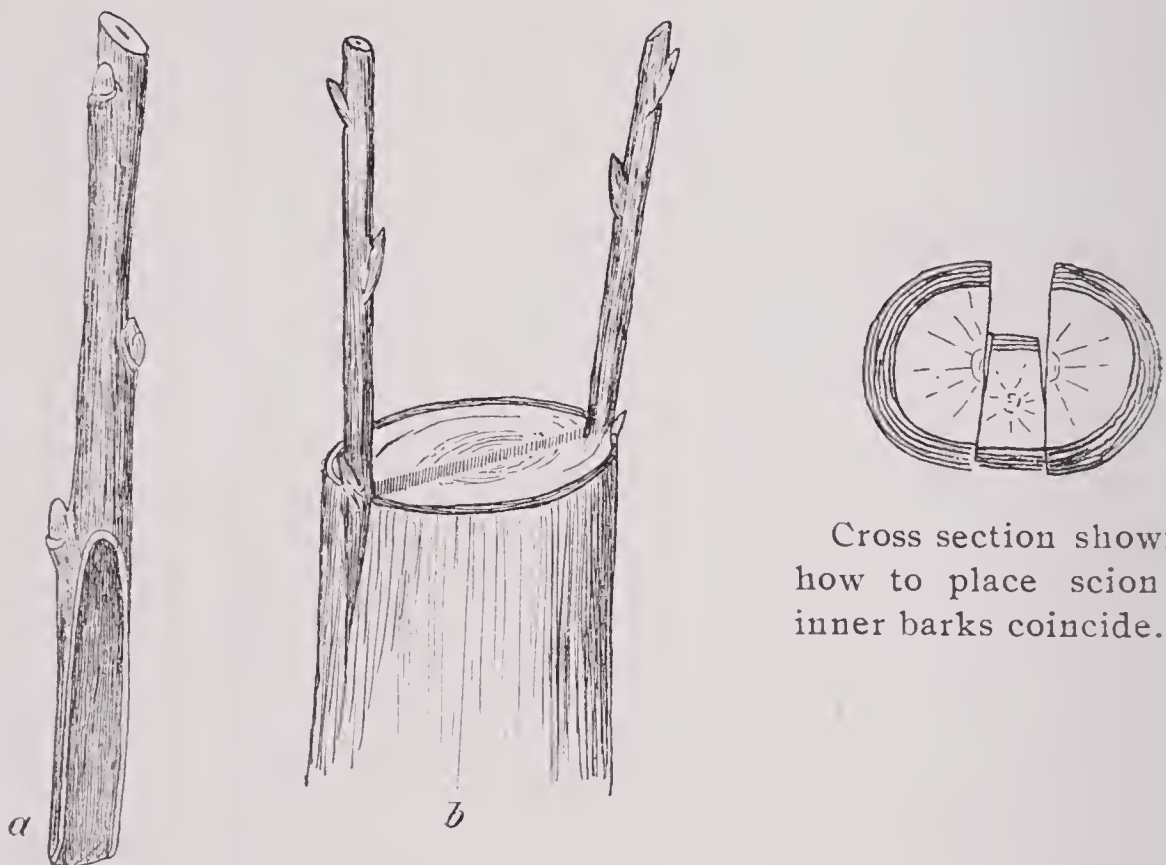
CLEFT GRAFTING

Cleft grafting is practiced on the tops of trees which are more or less matured. Wild apple trees of good size are often grafted so they will produce desirable fruit. It should be practiced on branches not over two inches in diameter. It is best to graft only one-third or one-half of a tree in a single season, so as to have enough top to furnish plenty of leaves. A saw, a pruning hook, a knife and a hammer are necessary as well as scions and grafting wax. With a clean, sharp saw, remove the end



Split the stub in the center

of the branch to be grafted at a point where the stub will not be over two inches in diameter. Much care should be taken to prevent the bark splitting down on the under side when the branch is cut off. It is often best to make part of the cut from underneath. Place the grafting hook so the chisel part is over the center of the cut and drive it down with the hammer splitting the stub into two parts through the center. Remove the tool and drive the wedge part into the end of the split stub so as to hold the edges



Cross section showing how to place scion so inner barks coincide.

a A scion but. *b* Scions inserted; stub ready for wax

open. Select a scion and make a double wedge shaped cut on the lower end of it, making it wedge shaped lengthwise so as to fit into the cleft, and wedge shaped horizontally so the inside of the scion inserted in the cleft is almost cut away while the outside, which comes in contact with the cambium layer of the stub, forms an arc of the original circle of the twig. When the stub is more than one inch in diameter, place a scion in each edge of the cleft so the inner bark of the scion and of the stock coincide. Remove the grafting hook. When the stub springs back, it will hold the scions firmly in place. All exposed

surfaces should be well covered with grafting wax to prevent evaporation. Let the wax cover the ruptured bark below where the scion is inserted as well as the top of the cut. The second season, one of the branches should be removed if both scions grow. When the stub is one inch or less across, but one scion should be inserted. If both were allowed to grow, a fork would be formed which would weaken the tree. The scions should be wrapped in moist cloths to prevent them from drying out. Cleft grafting is successfully done only in the spring, when buds are swelling. It is most successful on bright, warm days, free from cold or drying winds. For transplanting see Chapter VI.

PRUNING.

Pruning is often the most neglected part of the work about the home. It is very simple if one will only take some pains to learn how to prune correctly. Some butcher their trees and shrubs while others allow them to grow entirely to brush. When well done, pruning is the act of removing a part of the plant that the remainder may better serve our purpose. It is practiced for four results, each requiring a slightly different method. They are: 1, To change the form—Formative pruning. 2, To stimulate development, growth, fruit, flowers, etc.—Stimulative pruning. 3, To prevent some impending evil as a disease, dead or dying members—Protective pruning. 4, To hasten or retard maturity—Maturative pruning. The best time to prune is directly after blooming or toward the end of the dormant period, March in New England; January and February, south; are good months. It is better not to have large cut surfaces exposed to drying winter winds. They should be painted or covered with grafting wax. The worst time to prune is when the wounds bleed in spring or in the fall. Early flowering shrubs should be pruned after blooming.

TREES

Dead or dying branches should be removed at any time. Always cut back to living wood. Twining or cross-

ing branches should be removed. The tops of fruit trees should be kept open enough to allow fruit to color well. When necessary to cut a branch from a tree, the cut should be made as near the trunk as possible. A part of the cut should be made from the underside to prevent the bark splitting down. If cut in this way the wound quickly heals. If a "stub" is left the wound will not heal and decay begins which soon extends into the trunk. A young



Hollow tree prepared for Cement Filling
Connecting Chain above protecting against splitting

tree may be trained as it should grow and will need little pruning when old. All suckers whether from the branches or roots should be removed. Prune regularly and systematically every year. Trees not properly pruned when set and those that have been neglected require the most careful treatment and care. Where the trunk is divided, treatment is required not only to preserve the tree, but to protect life and property. Any severe storm is likely to break down one side injuring everything that comes in its way. One tree in breaking may destroy enough property to pay for fixing a dozen trees. Such trees may be made safe by putting a steel bolt through the trunk just below where they separate and by connecting two bolts ten to fifteen feet above with a steel chain. The chain allows for the natural movement of the tree. The heads of the bolts should be large and counter-sunk even with the inner bark, so the wound will heal in the shortest possible time. The openings with tar and oakum should be made water tight and the place where the trunk divides should be filled with tarred oakum to prevent water from entering and causing decay. *Hollow trees* are most frequently caused by improper pruning. When the tree is hollow, it should be treated as a dentist treats a hollow tooth. Clean out all the decay, put on a coat of tar and fill it with cement. The lives of many trees may be saved for years by this treatment. The cement should be mixed thin enough to fill all holes and may be made of one part cement and two parts sand. Large stones may be used to help fill up the cavities.

FOR ORNAMENTAL SHRUBS, prune to give the best effect. If new growths are wanted for twig effects in winter as the red and yellow stemmed willow, cut everything back near the ground in March. For flowering shrubs prune to preserve the best natural or desired shapes and a medium growth. Long sap growths rarely produce flowers or fruit.

FOR HYBRID ROSES, cut back Hardy Hybrid roses early in the spring, severely, to about one foot from the ground. Leave but few buds to stimulate as much new

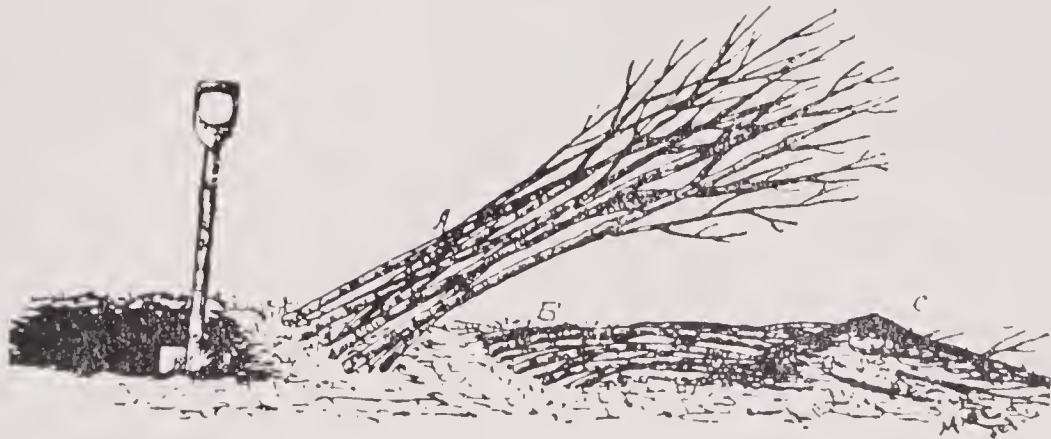
growth as possible, as this produces the flowers. Watch for native stock canes from the ground that often appear where budded or grafted stock is used. Remove all of them or they will ruin the rose bush. After blooming cut back about half as much as in the spring to stimulate another crop of flowers. When well planted, pruned, and cared for, many of the roses will bloom from May until October.

GRAPE VINES—For the best success, grape vines should be pruned so as to renew the canes. There are several methods of the renewal system. Any one or a combination of several may be used with success. For arbors prune to get as many new canes as possible each year and at the same time get the effect of the arbor. The simplest renewal system is where the vines are planted eight feet apart, in rows eight or ten feet apart. Posts are set in the row and two wires are stretched upon them. The lowest wire is two and one-half feet from the ground; the upper one is four feet from the ground. The new cane is grown on the lower wire. The fruiting cane is grown on the upper wire where it gets more light and air which prevents disease. At the end of the season or sometime before the first of March, the upper cane is cut off near the lower wire. The lower one is now carried up to the upper wire where it is tied or fastened with little hooks made for the purpose. A stub of one or two eyes is left near the lower wire and from this the new cane is grown. The fruit is always grown from the new growth on last season's cane.

RASPBERRIES AND BLACKBERRIES should always be pruned by cutting out all canes that have fruited. They are best removed by a raspberry hook which is a small sharp hook on a handle about four feet long.

CARE

Many persons fail to realize that shrubs or trees, when once planted, need any care. Trees and shrubs should be unpacked immediately upon their arrival and if they can not be replanted at once, they should be "heeled-in."



Trees Heeled In

This consists of removing them from bundles and temporarily covering their roots with soil, allowing the stems to slant away from the sun. If the plants have become very dry, it is advisable to lay them down and cover their full length with soil. Heeling-in is the best done on the north side of buildings. All broken or bruised roots should be removed, leaving a clean cut surface which quickly heals. The top should usually be cut back about one third. In poor soils, trees will make better growth if a supply of stable manure is mixed with the soil, put into the hole *after* the roots are covered. Manure should not come in contact with the roots. Large trees may be transplanted, but require much care. A ball of earth should be taken up with them, if possible. It is better to root prune by digging a trench around each tree the previous year, cutting all the roots. This trench should be about one-sixth of the height of the tree from the trunk, i e., a tree 25 feet high would have a trench, four feet from the trunk, eight feet in diameter. Large trees should be set immediately after digging, and a stream of water should always be used to settle the soil about the roots. Street trees as maples and elms should not be set closer than 30 to 40 feet apart. Young trees well pruned and set, grow shapely with little additional care if unmolested. Crossing branches should be removed. If there is a tendency to become unsymmetrical, the ends of the longest branches should be cut off. Shrubs should be planted in well tilled borders and trees do better when dug about and fertilized. Care should always be taken not to injure roots.



Cutting all Broken Roots



Poplar and other quick growing trees should be very severely pruned

SPECIAL CARE OF ROSES. Roses should be treated differently than most shrubs. While the ordinary shrub does best in a medium loam, roses like a heavy loam, the more clay the better. Hardy hybrid roses may be made to bloom almost continuously if the bed is well prepared before setting. To prepare the bed, dig out the soil for a depth of three feet, and fill in the bottom with bones, wood ashes, and a compost of cow manure. For the top, use two parts of pure clay to one part of fresh cow manure with a good sprinkling of fine bone meal; mix these thoroughly. If the roses are grafted stock, they should be set three or four inches below the buds. It is usually wise to set rose bushes two or three inches lower than they have been growing. This encourages rooting above the grafts. A yearly application of fine bone meal or wood ashes or both is beneficial. It is usually necessary to *spray* roses as soon as the buds start in spring and to continue to spray until after the danger of plant aphides is over. Both the green and white fly are very troublesome. Arsenic poisons are useless because the insect has a mouth like a mosquito, pierces the skin of the leaf, and sucks the vital juices from within. A contact poison such as kerosene emulsion, whale oil soap, or ivory soap should be used. This may seem a good deal of work, but it will pay. A rose bed thoroughly prepared, and the roses cared for as above described, if they are of the hardy tea or hybrid varieties will yield bloom every month from June to October and will also have the rich, dark foliage of the florist's rose. Of course, June roses cannot be made to bloom continuously, and while the care and the method of planting is practically the same, the result will not be continuous bloom; neither should they be as thoroughly pruned.

CHAPTER XIV.

PLANT ENEMIES AND THEIR REMEDIES.

IN this chapter no attempt will be made to fully describe the enemies found in nearly every garden. For convenience they will be divided into Plant Diseases and Insect Pests. The latter will be subdivided into sucking insects, biting and chewing insects, and scale insects. Each subject will be briefly treated and remedies easy to apply given.

PLANT DISEASES.

Plant diseases are very similar to diseases in human beings, caused by the same class of vegetable growth called germs. In the human family we have diphtheria, scarlet fever, or small-pox. In the plant family, rusts, mildews, and blight. The best way to prevent disease and insect attacks in plants is to give them plenty of food and air, keep them healthy and growing. It is easier to prevent disease than to cure it. The spores or germs of all diseases of plants are killed by the Bordeaux mixture. Plants likely to be attacked should be sprayed as a preventative measure. This kills the germs that fall on the leaf and prevents the disease starting. Sunshine is the best of all germicides.

INSECT PESTS.

There are so many kinds of insects that descriptions of them would fill a large book. The *sucking insects* are those that have mouth parts like the mosquito. The beak pierces the skin of the leaf or tender twigs and sucks out the chlorophyl which is not only the green coloring matter of the leaf but its energy as well. The white and green fly found on rose bushes are among the commonest in this class. They are commonly known as plant lice. All this class of pests must be killed by a contact poison

—something that kills the insects by coming in contact with their bodies. Kerosene emulsion, ivory soap solutions, and whale oil soap are among the remedies for this class of insects. *The chewing insects* are easily killed



The Destructive Elm Leaf Beetle

by spraying with any active poison as lead arsenate, paris green, helebore. It is easy to distinguish them as they eat up the leaves. Lava (often called worms) of many insects come under this class. *Scale insects* are really sucking insects. They stick so closely to the bark of twigs that they are often overlooked and the tree or shrub is sometimes nearly killed before the cause is discovered. Careful examination; however, and especially scraping the thumb nail along the bark of the twig, will indicate their presence. They require special treatment, usually winter spraying.

SPRAYING.

A spray pump is very useful about the home. Any good bucket pump will do all the work necessary on a small place. Spraying to be effective should be repeatedly done. Fair results may be obtained by using a brush broom or a bundle of fine twigs. The finer the spray the better. Considerable force is necessary to carry the spray into the foliage. The mixtures given in the following paragraphs are effective, and easily obtained or made.

Do not wait until the bugs have eaten up your plants, spray as soon as the enemies appear.

SPRAY MIXTURES FOR PLANT DISEASES.

The Bordeaux mixture is the most generally used of all. It discolors the foliage, however. All sprays should be applied in as fine a spray as possible. They should be applied as a preventative to kill the spores before the plants become diseased. Use 1 lb. blue stone or copper sulphate and 1 lb. rock lime. Dissolve the first in a wooden or earthen vessel containing 5 quarts of water, by suspending it in a bag. Slake the lime in 5 quarts of water. Keep these stock solutions separate until ready to spray. Place 4 quarts of water in a pail and add 1 pint of each. It is better to strain this through two thicknesses of bransack to prevent clogging the spray nozzle.

The Bordeaux mixture is used to prevent rusts, mildews, decay and all plant diseases. Another remedy for rusts and mildews on roses or other plants, is to sift, or better, blow a thin coating of flowers-of-sulphur over the plants. Potassium sulphide or liver-of-sulphur may be applied for the same purpose. Use 1 ounce dissolved in 2 gallons of water. It does not discolor the foliage but has a disagreeable odor.

SPRAYING MIXTURES FOR INSECTS.

FOR SUCKING INSECTS. The following mixtures are destructive to all insects that suck the juice, as green fly, plant lice, etc. *Kerosene Emulsion*: Dissolve $\frac{1}{8}$ cake of

ivory or any good hard soap shaved fine in one pint of water, remove from the fire and add one quart of kerosene. Churn with a force pump or pour from one pail to another for about ten minutes when it should be thoroughly mixed. Take one pint of this stock emulsion and add seven quarts of water and mix. It will mix easier if the water is warm. Apply this to the bushes with force



Plant Lice

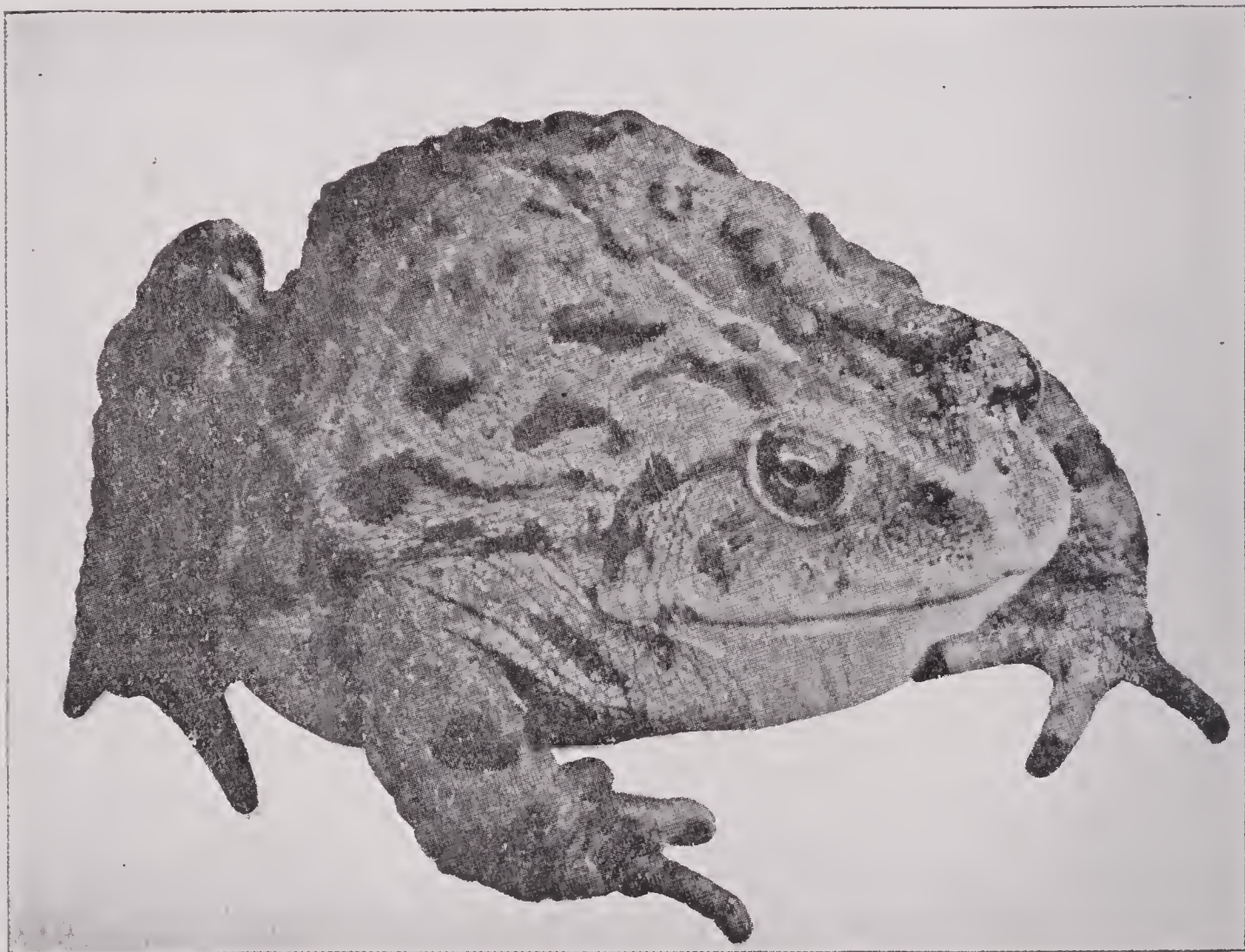
in as fine a spray as possible. For all kinds of plant lice, spray two days in succession and as often as they reappear.

IVORY SOAP SOLUTION. Dissolve 1 lb. cake in 4 gallons of water. Apply when luke warm. Whale oil soap should be applied according to the printed directions.

TOBACCO DUST. Tobacco dust and tobacco water is also good. The dust should be sifted or blown with a blower over the leaves and twigs. Individual house plants may be treated by placing a paper bag over the plant and hav-

ing some friend who smokes, puff the smoke of a cigar into the bag. This is often the easiest treatment for house plants. The bag should remain for some time over the plant, to hold the smoke until the plant lice are killed. Pyrethrum powder and Bug Death are also used to destroy troublesome sucking insects.

FOR CHEWING INSECTS it is necessary to apply an active or positive poison such as Paris Green, London Purple, or Helebores. These may be applied either dry or in water. Use a tablespoonful of Helebores to a pail of water or mix in 2 quarts of ashes. Use a teaspoonful of Paris Green to a pail of water, or 2 quarts of ashes applied dry. All spray mixtures should be kept thoroughly mixed, and the finer spray the better.



The Garden Toad—One of the gardener's best friends

SCALE INSECTS. Scale insects are killing many of our trees and shrubs. As a preventative it is well to spray in winter with a "scale-cide" or something prepared especially for scale pests. Kerosene Emulsion, one part stock solution to ten parts water may help some. Spraying may be done any warm day in winter. Two or three applications are better than one. For the ordinary home garden the mixtures here given will be found easy to make or obtain, and inexpensive to apply. A little care will bring big results. Never allow plants to become weakened by insect attacks as they are then likely to be attacked by disease germs. Keep them growing and the soil tilled. Encourage the enemies of insects as the birds and toads. Birds eat millions of destructive insects and a single garden toad has been proved to eat in one season destructive worms and bugs, that if left, would destroy over nineteen dollars worth of produce. (See Nature Leaflet, No. 28, State Board of Agriculture, Boston, Mass. Free.)

DAMPING OFF FUNGUS.

This often causes small seedling plants and cuttings to disappear, sometimes in a single night. A simple remedy usually effective is to sift clean dry sand (baked or sterilized sand is best) over the young plants and withhold water until they become rather dry. A high temperature and a damp soil favor damping off fungus.

POTATO SCAB.

Suspend the potatoes in sacks, in 30 gallons of water, to which 1 pint of Formaldehyde has been added. Potatoes should be sprayed 6 times with Bordeaux mixture. Paris Green should be added to kill the beetles when necessary. Use 4 lbs. lime, 4 lbs. blue stone (copper sulphate) and 1 lb. Paris Green to 50 gallons of water. Shake the lime in 5 gals. of water and dissolve the copper sulphate in 5 gals. of water by suspending it in a sack. Pour these into 40 gals. of water. Never pour the stock solutions together before adding water. Never use iron

or tin about the Bordeaux mixture. Treating and spraying potatoes often increases the crop more than one hundred per cent.

CHAPTER XV.

*A FLOWER GARDEN COMPETITION

THE Carnegie Flower Garden Competition of Northampton, was started by the President of the Home-Culture Clubs, now the People's Institute, in 1899. Beginning with only a score of competitors, the interest in the competition and its wonderful results has steadily grown until over one thousand homes (a fourth of the homes in the city) are competing for the prizes offered each year.

The work has grown so that the city is divided into seven different districts (ward boundaries) and in order to distribute the prizes more evenly, each district receives three prizes. The amazing numerical growth of the competition shows the enthusiasm of the competitors and the general interest throughout the city. But this awakened interest, wonderful as it may seem, is overshadowed by the astonishing results accomplished.

Many garden competitors started in the competition with their lawns merely grassless yards or a waste of sand and weeds. Now in place of these unsightly yards are beautiful, well kept lawns with appropriately planted shrubbery. This is done not only by persons who are well to do, but by persons working in mills, who are simply tenants in the places where they live.

So silently and gradually has this work been done, that many fail to realize the wonderful changes that have taken place until other cities are visited or pictures taken ten years ago, and now are contrasted. One visitor in the city after riding for two hours through the factory section,

*The Carnegie Flower Garden of Northampton Mass., has been carried on for a decade with so much success; the rules so carefully worked out, and successes obtained when the same rules and methods have been adopted elsewhere, that they are here given in the hope that they may prove helpful to others interested in beautifying homes in other communities.

turned to her companion and asked, "Where do the factory people live?"

The pictures tell the story of the changed condition better than words. In order to get contrasting photographs, the writer, after looking entirely over the city, had to go to another city to get views of homes without a lawn or a flower or a shrub about them.

A Flower Garden Committee of about twenty-five, divide the city among themselves. The latter part of winter and early spring they visit each home and enroll the competitors. One expert visits all competing gardens in the summer and marks each on the *layout* or plan of the place; the *harmony* or its arrangements both as to color of blooms and size and form of trees, shrubs, and plants. Third, the *condition* or the order and neatness of everything. Fourth, the duration of the planting.

Visitors advise and help the competitors all they can and tell them the whole place is considered the garden from the gutter in front to the end of the back yard. The lawn should be thoroughly weeded. Mow the grass often. In laying out the plantings, avoid straight lines and sharp angles. Plant all flowers you wish, but plant shrubs at their back to give more pleasant and lasting effects while the annuals are cut of season as well as when not in bloom. Try to plant so as to make the whole place one single picture of a **home** with the **house** its chief feature and the outside boundary line its frame. The place needs to be planted on all its boundaries and left open in the middle. Plant some small evergreens so as to have a twelve months' garden instead of a three months' garden.

Civic gardening is contagious. As one man improves his place, the whole surrounding neighborhood begins to take on a cleaner aspect until soon there are beautifully kept and well planted lawns, where a few years ago nearly the entire street was bordered by grassless yards. The improvement of the property, the general civic betterment, and the uplift in moral tone is unquestionably felt. Indeed, the contagion is spreading throughout the entire

city, which is fast becoming a city of gardens and well kept homes. With continued efforts and the co-operation of all, Northampton will soon be known as the City Beautiful.

RULES

(Garden Competitors will be interested to know that these rules, worked out for this competition, are being adopted for similar competitions in other cities.)

1. Only adult residents living within the city limits of Northampton, may enter this competition, although minors may take whatever part they choose in gardening.
2. No person may enter the competition while engaged in gardening as a business.
3. No competitor may hire assistance of any sort in his gardening, except in the unlimited class.
4. Each garden must belong to the dwelling of the person offering it in competition, but the place may be either owned or rented.
5. Each garden must comprise the entire house lot on which it stands.
6. No competitor may take any prize as low as he has taken with the same garden in any previous season.
7. Any garden which has taken the Capital Prize of the Carnegie Competition at least two years previously may take part in what is known as the Capital Prize Winners' Competition, and may take this prize as often as its rating stands highest except that no garden can take this prize two years in succession.
8. In the rating of gardens, four merits will be counted as of leading value: First, the plan on which the garden is laid out; second, the harmony of its features as to form and colors; third, the general upkeep of walks, beds, turf and buildings and enclosures; fourth, the duration of the planting.
9. The field or competition is divided into seven nearly equal districts, the ward boundary lines of the city. In each of these districts three of the prizes may be

awarded, and no two consecutive prizes in the list can be awarded in the same district.

10. Capital Prize Winner's Price, \$6; capital, \$15; second, \$13; third, \$10; fourth, \$9.50; fifth, \$9; sixth, \$8.50; seventh, \$8; eighth, \$7.50; ninth, \$7; tenth, \$6.50; eleventh, \$6; twelfth, \$5.50; thirteenth, \$5; fourteenth, \$4.50; fifteenth, \$4; sixteenth, \$3.75; seventeenth, \$3.50; eighteenth, \$3.25; nineteenth, \$3; twentieth, \$2.75; twenty-first, \$2.50.

11. A separate prize of \$6, and a second one of \$4 may be competed for by persons using hired help in their gardens, subject to these rules, except rule three.

12. Any number of not less than seven gardens opposite one another on the same street, or adjoining one another whether on the same street or not, may form a neighborhood garden club to compete for a first club prize of \$1 per garden, and a second club prize of 50 cents per garden, payable to the regularly elected secretary of the club.

13. Gardens belonging to such clubs shall have every right of individual contestants in the general competition, the same as if they did not belong to clubs.

14. An empty lot or an empty dwelling, or the occupied dwelling of no more than one family, refusing to join the neighborhood garden club, shall not be counted separating any group of neighbors seeking to form a club under this rule.

15. The annual award of prizes shall be on some date in October, to be announced by the management of the People's Institute. Seventy-five additional prizes of shrubs are given by a nursery man.

All homes that the committee fail to visit to enroll, are visited by some one from the People's Institute. The marking is done by an expert, who visits every competing garden and marks it on the points mentioned in rule eight. These are marked on a scale of 100. When visiting, he gives advise as to planning, planting and improving the grounds.

A card is left at each place (whether any one is at home or not) stating that this competing garden officially inspected, date _____, signed by the official inspector. On the reverse side of this card are the rules for getting higher marks, as mentioned just before the rules in this chapter.

The names of all persons whose gardens average over 90 or the ten highest in each district are given to the president of the Institute, who in turn visits and marks these gardens. The highest gardens are still again visited and marked by some other person. The prize award is made a great affair when with the shrubs over 100 prizes are given out, including 150 shrubs and about two hundred dollars in money. Stereopticon slides of the winning gardens are sometimes shown.

CHAPTER XVI.

HOW TO FORM A CITY BEAUTIFUL LEAGUE.

THE progressive movement to make cities more healthy, by cleaning them up, villages and homes more attractive by planting shrubs and flowers about them, is world wide. For the city officials to clean up the streets and make all public places attractive accomplishes but little compared with the co-operative effort of every one living in the community. To get the people to work unitedly is a problem. Many are willing, but they do not know how to start. The previous chapter shows a method that has worked successfully for more than half a score of years in a conservative New England city. Another plan to secure the co-operation of every organization in the city to obtain quick and lasting returns has been successfully established in many towns and cities. It is the formation of a City Beautiful League. The influence of such an organization is felt from the very start because every influential body in the community is brought into the work.

TO FORM A CITY BEAUTIFUL LEAGUE.

After enthusing as many persons as possible, call a public meeting at which the Mayor, the City Council, the School Superintendent, and Board of Education, the Executive Officer of the Board of Trade, Chamber of Commerce, or Commercial Club, and the president of every organization in the city are present. An outside speaker brings enthusiasm and often means a large audience, but is not indispensable. After the address (if any) the meeting should be called to order, and a temporary chairman elected who shall preside until a permanent chairman is chosen. A temporary secretary or clerk should be elected or appointed by the Chair. The reason for calling the meeting is briefly explained and a general discussion on the advisability of organizing may take place.

In order to bring the matter definitely before the house a motion to form a permanent organization should be made. If this motion passes, the Chairman should appoint, or the body elect a Committee on Constitution and By-Laws, and a Nominating Committee. The following will serve as a guide.

CONSTITUTION.

ARTICLE I, NAME. The name of this organization shall be known as the City Beautiful League of

ART. II, PURPOSE. The purpose is three-fold: First, to improve the general appearance of the yards, streets, gardens and alleys. Second, to encourage the boys and girls to have gardens, to grow more flowers, and to know more of Nature and of the soil. Third, to inculcate in the minds of all our people more love for the beautiful in Nature.

ART. III, MEMBERSHIP. Any person may become a member of this League by paying an annual membership fee of fifty cents or more, which shall be considered as membership for the whole family.

ART. IV, OFFICERS. There shall be a President, a General Vice-President, a Secretary, a Treasurer, an Auditor, and Vice-Presidents, to consist of the Mayor, Superintendent of Schools, Secretary Commercial Club, and the presidents of all women's clubs in the city. These officers shall constitute an Executive Committee.

ART. V, MEETINGS. The League shall hold meetings once a month throughout the year, excepting November, December and January. An annual meeting shall be held in February, when an elaborate program will be arranged.

ART. VI, AMENDMENTS. No alteration in this Constitution shall be made except upon motion made in writing. This motion to be voted on at the following meeting, two-thirds of the members present must vote in favor of the motion for its adoption. A quorum for this purpose shall consist of twenty-five members.

BY-LAWS.

ART. I. OFFICERS shall perform the usual duties of their respective offices. The treasurer shall receive all moneys and pay all bills when properly approved by the Chairman of the Committee incurring the expense, and the President, unless a special Auditing Committee is appointed by the Executive Committee.

ART. II. The EXECUTIVE COMMITTEE shall have power to elect Standing Committees on Membership, Entertainment, Finance, Auditing, and arrange for competition, inspection and award of prizes. One part of their work will be to promote attractive homes by contests offering prizes for the best gardens and lawns, and to formulate rules for carrying on these contests.

* * *

No existing organization can do the work as well as a new organization formed for the purpose of beautifying the city unless such organization already has every member of the city in it. The membership fee should be so low as to exclude no one. Some will give large contributions.

Persons living in the poorest section of the city and under the worst conditions should be especially urged to join. Results are sure to follow. Lawns will take the place of grassless yards; gardens and flowers the place of unsightly, unsanitary and unproductive back yard dumps. Whole streets will be lined with well kept lawns and well planted homes. Coming in closer contact with the soil and in the open air and sunshine will make the people nobler, better citizens. Whole families will become interested in making the **home** the prettiest as well as the best place on earth. Children will be occupied in gardens instead of spending their time on the corners of the street. The city of attractive homes, well-kept streets and healthy citizens will rapidly become the CITY BEAUTIFUL.



H. D. HEMENWAY,
Author of "HOW TO MAKE SCHOOL GARDENS"
Published by Doubleday, Page & Co., N. Y.

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